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ABSTRACT

The publication provides guidelines for the design of new facilities or rehabilitation of existing facilities to accommodate physically handicapped persons in the South Carolina State Parks system. The guidelines are also recommended for use in regional, special district, county, and municipal parks within the state. The guidelines were developed within the context of the following goals: (1) making facilities more accessible without destroying the character of the site, and (2) providing different levels of challenge and individual options. The first section gives general standards for the following: space allowances and reach ranges, clear floor or ground space for wheelchairs, controls and operating mechanisms, seating, tables, and work surfaces. Following sections provide standards on: circulation within the park (vehicular parking, walkways, paths, entrances and exits to buildings); swimming (beaches, pools, lakes); boat docks; fishing facilities; picnicking (tables and benches, grills, water fountains, picnic shelters, trash receptacles); camping (developed camping, primitive camping, wilderness camping); natural/historic features (approach access, entrances, internal access); playgrounds (surfaces, swinging, sliding and climbing, balancing, games, water and sand); special programs; rental cabins and lodge rooms; amphitheatres; telephones; restrooms; signage; stores, tackle shops, and restaurants; and laundry areas. Numerous black and white drawings and diagrams illustrate the text. (DB)

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EC 211871

DESIGN GUIDELINES

STUDY OF HANDICAPPED ACCESSIBILITY IN SOUTH CAROLINA STATE PARKS

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TABLE OF CONTENTS

INTRODUCTION 1

GENERAL 2

SPACE ALLOWANCES AND REACH RANGES 2
CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS 2
CONTROLS AND OPERATING MECHANISMS 8
SEATING, TABLES, AND WORK SURFACES 8

CIRCULATION WITHIN THE PARK 12

VEHICULAR PARKING 12

WALKWAYS, PATHS, AND TRAILS 15

Accessible Routes 15
Protruding Objects 15
Ground and Floor Surfaces 19
Curb Ramps 23
Ramps 27
Stairs 29
Tactile Warnings 31
Pathways and Trails 32
Trails 32
Trail Surfaces 34
Pathways 34
Pathways in Developed Areas 39
Pathway Ramps 39

ENTRANCES AND EXITS TO BUILDINGS 40

SWIMMING 45

BEACHES 45

Pathway from Parking to Beach 45
Pathway from Beach to Water 45
Entering the Water 48

POOLS 48

LAKES 50

BOAT DOCKS 51

ACCESS TO BOATING FACILITIES 51

BOAT TRANSFER FACILITIES 51

Shore Transfer 51
Fixed Dock Transfer 52

SAFETY 52

Fixed Docks and Piers 52
Floating Docks 54

FISHING FACILITIES 56

INTEGRATION OF ACCESSIBLE FACILTIES 56

Shared 56
Adjacent 56
Exclusive 56

FISHING PIERS 57

STILL WATER 57

Safety 59

MOVING WATER 59

Safety 59
Casting 61

FISHING STATIONS 61

Railings 62
Transitions to Pathways 62
Surface Materials 62

PICNICKING 64

TABLES AND BENCHES 64

GRILLS 64

WATER FOUNTAINS 64

PICNIC SHELTERS 66

TRASH RECEPTACLES 68

TRAILS APPROACHING PICNIC AREAS 68

CAMPING 69

DEVELOPED CAMPING 69

PRIMITIVE CAMPING 72

WILDERNESS CAMPING 74

NATURAL/HISTORIC FEATURES 75

APPROACH TRAILS 75

APPROACH ACCESS 75

ENTRANCES 75

INTERNAL ACCESS 78

PLAYGROUNDS 79

GENERAL RECOMMENDATIONS 79

SURFACES 81

SWINGING 81

SLIDING AND CLIMBING 83

BALANCING 83

GAMES 83

WATER AND SAND 87

SPECIAL PROGRAMS 87

RENTAL CABINS AND LODGE ROOMS 87

AMPHITHEATRES 88

TELEPHONES 90

RESTROOMS 92

WATER CLOSETS 92

TOILET STALLS 95

URINALS 95

LAVATORIES SINKS AND MIRRORS 99

BATHTUBS 99

SHOWER STALLS 102

HANDRAILS, GRAB BARS, AND TUB AND SHOWER SEATS 105

VAULT TOILETS 107

SIGNAGE 109

International Symbol of Access 109

STORES, TACKLE SHOPS, AND RESTUARANTS 112

LAUNDRY AREAS 115

BIBLIOGRAPHY 116

LIST OF TABLES

Table 1: PARKING SPACES AND PASSENGER LOADING ZONES FOR HANDICAPPED. 12

Table 2: ALLOWABLE RAMP DIMENSIONS FOR CONSTRUCTION IN EXISTING SITES, BUILDINGS, AND FACILITIES. 29

Table 3: LOCATIONS FOR WHEELCHAIR USERS IN ASSEMBLY AREAS 88

LIST OF ILLUSTRATIONS

Minimum Clear Width for Single Wheelchair	3
Minimum Clear Width for Two Wheelchairs	3
Wheelchair Turning Space	3
Minimum Clear Floor Space for Wheelchairs	4
Forward Reach	5
Side Reach	6
Reach Ranges for Persons Seated in Wheelchairs	7
Control Reach Limitations	9
Minimum Clearances for Seating and Tables	10
Space Requirements for Wheelchair Seating Spaces in Series	11
Dimensions of Parking Spaces	13
Width of Accessible Route	16
Minimum Passage Width for One Wheelchair and One Ambulatory Person	17
Space Needed for Smooth U-Turn in a Wheelchair	17
Dimensions of Adult-Sized Wheelchairs	17
Changes in Level	18
Overhead Hazards	18
Protruding Objects	20
Protruding Objects (Continued)	21
Cane Technique	22
Measurement of Curb Ramp Slopes	24
Sides of Curb Ramps	24
Built-Up Curb Ramps	24
Components of a Single Ramp Run and Sample Ramp Dimensions	26
Examples of Edge Protection and Handrail Extensions	28

Usable Tread Width and Examples of Acceptable Nosings 30

Stair Handrails 30

Pathways & Trails 33

Pathways & Trails (Continued) 35

Pathways & Trails (Continued) 38

Clear Doorway Width and Depth 41

Maneuvering Clearances at Doors 42

Maneuvering Clearances at Doors (Continued) 43

Two Hinged Doors in Series 43

Beaches 46

Swimming 47

Swimming Pools 49

Boat Dock 53

Floating Boat Dock 53

Connection to Floating Dock 55

Still Water Fishing Concept 58

Casting Area 60

Moving Water Fishing Concept 60

Railing Detail 63

Picnic Areas 65

Grills 65

Drinking Fountains and Water Coolers 67

Typical Handicapped Campsite 70

Developed Camping 71

Primitive Camping 73

Typical Plan of Historic Site 76

Earthwork Ramp 77

Spring Toys, Slides, and Swings 80

Swinging 82

Balancing 84

Basketball, Shuffleboard, Gaming Table 85

Playgrounds and Play Areas 86

Typical Amphitheater Plan 89

Mounting Heights and Clearances for Telephones 91

Clear Floor Space at Water Closets 93

Grab Bars at Water Closets 94

Toilet Stalls 96

Wheelchair Transfers 97

Clear Floor Space at Bathtubs 100

Grab Bars at Bathtubs 101

Shower Size and Clearances 103

Grab Bars at Shower Stalls 104

Size and Spacing of Handrails and Grab Bars 106

Vault Toilets 108

International Symbol of Accessibility 110

Signage 111

Food Service Lines 113

Tableware Areas 113

Storage Shelves and Closets 114

DESIGN GUIDELINES

Study of Handicapped Accessibility in South Carolina State Parks

INTRODUCTION

This publication provides recommended guidelines for the design of new facilities or rehabilitation of existing facilities to accomodate physically handicapped persons in the South Carolina State Parks System. These guidelines are also recommended for use in regional, special district, county, and municipal parks to the extent possible. Any higher standards required by governmental jurisdictions should take precedence over these recommendations.

The guidelines are actually a compilation of recommendations from many sources and are not all-encompassing. Guidelines for facilities not specifically discussed may be loosely interpreted to be similar to other facilities (reach ranges, clear floor spaces, etc.)

Goals for improving handicapped accessibility include the following:

1. Making facilities more accessible without destroying the character of the site.

2. Providing different levels of challenge and individual options.

Your comments on these design guidelines are invited. We also ask that you share with us any new designs which help meet the above goals.

GENERAL

SPACE ALLOWANCES AND REACH RANGES

Wheelchair Passage Width. The minimum clear width for single wheelchair passage shall be 32 in. (815 mm) at a point and 36 in. (915 mm) continuously. (Fed. Reg.)

Width for Wheelchair Passing. The minimum width for two wheelchairs to pass is 60 in. (1525 mm). (Fed. Reg.)

Wheelchair Turning Space. The space required for a wheelchair to make a 180-degree turn is a clear space of 60-in. (1525 mm) diameter (see Fig.3(a)) or a T-shaped space. (Fed. Reg.)

CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS

Size and Approach. The minimum clear floor or ground space required to accommodate a single, stationary wheelchair and occupant is 30 in. by 48 in. (760 mm by 1220 mm). The minimum clear floor or ground space for wheelchairs may be positioned for forward or parallel approach to an object. Clear floor or ground space for wheelchairs may be part of the knee space required under some objects. (Fed. Reg.)

Relationship of Maneuvering Clearances to Wheelchair Spaces. One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin or overlap an accessible route or adjoin another wheelchair clear floor space. If a clear floor space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances shall be provided by the guidelines for wheelchair maneuvering clearances. (Fed. Reg.)

Surfaces of Wheelchair Spaces. Clear floor or ground spaces for wheelchairs shall comply with the standards for wheelchair surfaces. (Fed. Reg.)

Forward Reach. If the clear floor space only allows forward approach to an object, the maximum high forward reach allowed shall be 48 in. (1220 mm). The minimum low forward reach is 15in. (380 mm). If the high forward reach is over an obstruction, reach and clearance shall be pursuant to the guidelines for high forward reach. (Fed. Reg.)

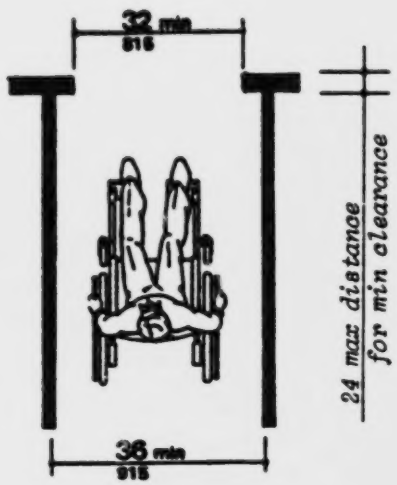


Fig. 1
Minimum Clear Width
for Single Wheelchair

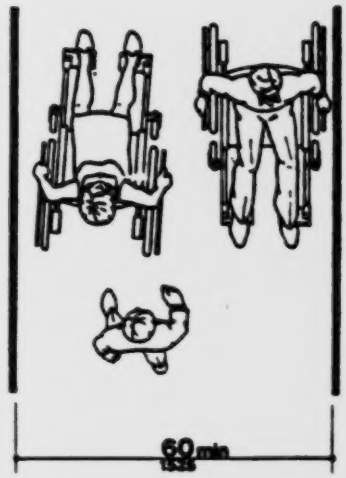
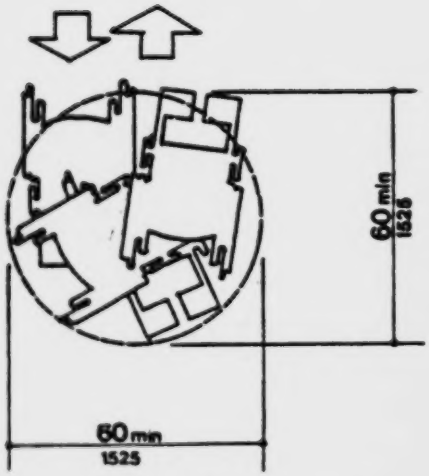
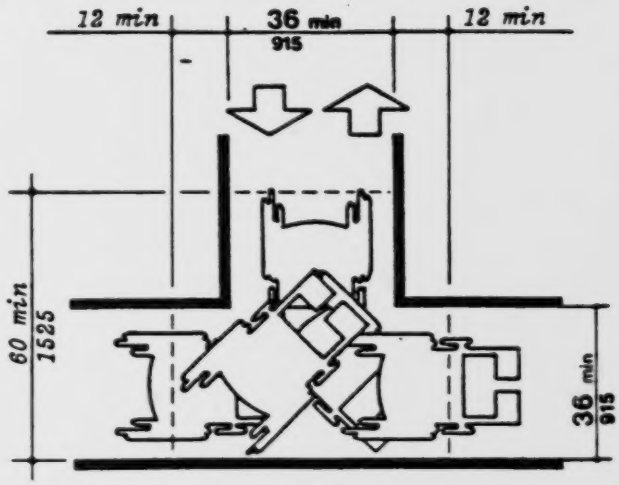


Fig. 2
Minimum Clear Width
for Two Wheelchairs



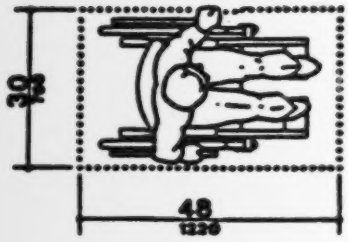
(a)
60-in (1525-mm) - Diameter Space



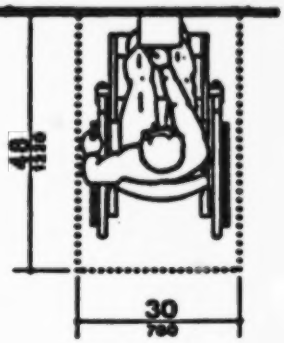
(b)
T-Shaped Space for 180° Turns

Fig. 3
Wheelchair Turning Space

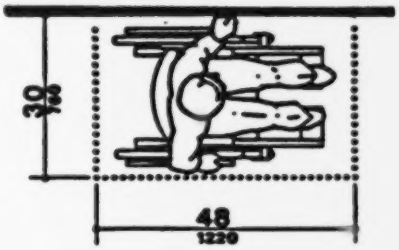
(Fed. Reg.)



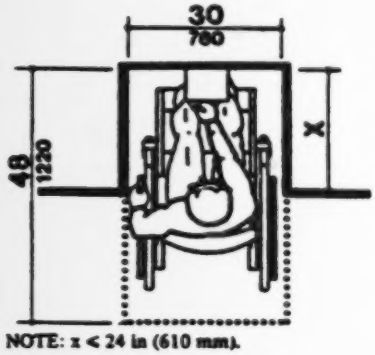
(a)
Clear Floor Space



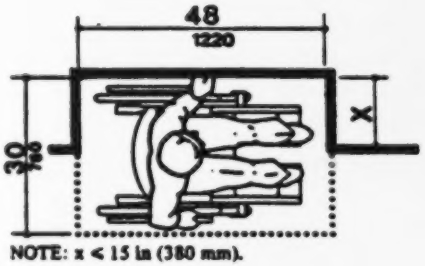
(b)
Forward Approach



(c)
Parallel Approach

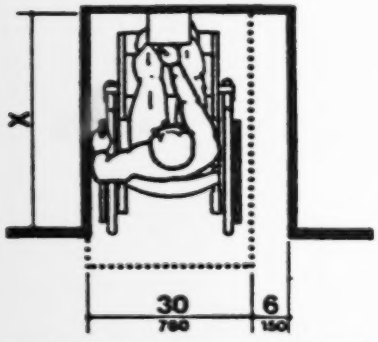


NOTE: x < 24 in (610 mm).

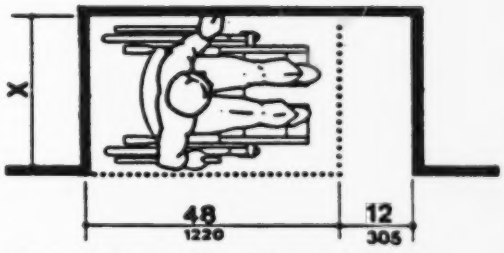


NOTE: x < 15 in (380 mm).

(d)
Clear Floor Space in Alcoves



NOTE: If x > 24 in (610 mm), then an additional maneuvering clearance of 6 in (150 mm) shall be provided as shown.

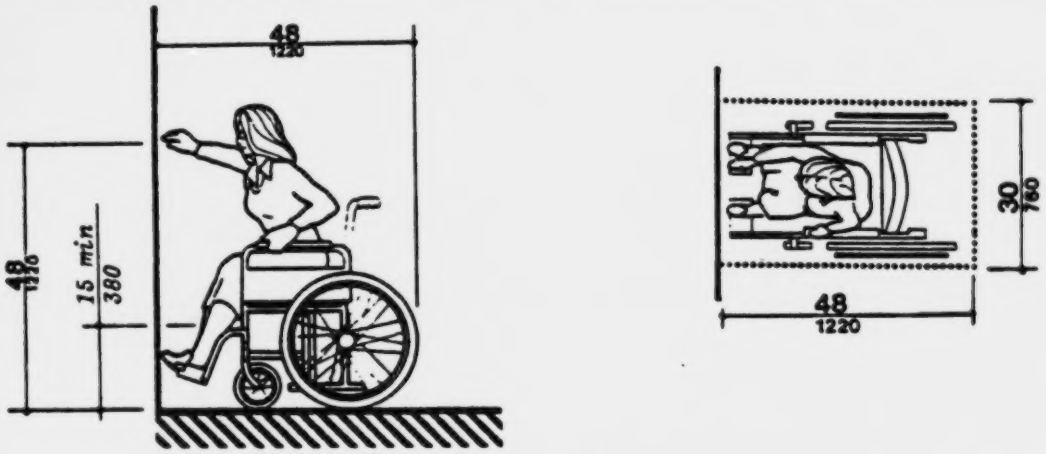


NOTE: If x > 15 in (380 mm), then an additional maneuvering clearance of 12 in (305 mm) shall be provided as shown.

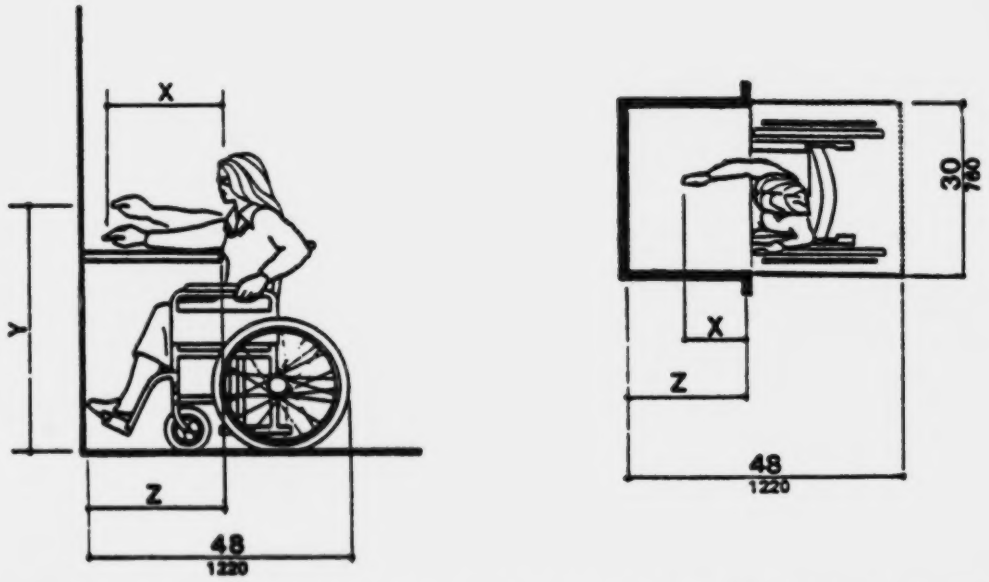
(e)
Additional Maneuvering Clearances for Alcoves

Fig. 4
Minimum Clear Floor Space for Wheelchairs

(Fed. Reg.)



(a)
High Forward Reach Limit

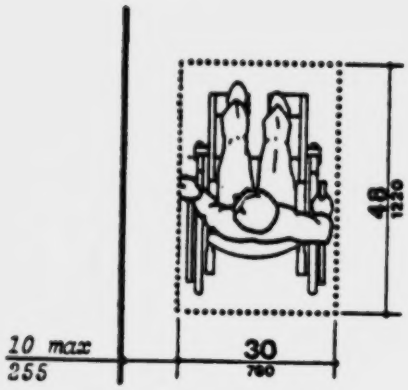


NOTE: x shall be ≤25 in (635 mm); z shall be ≥x. When x < 20 in (510 mm), then y shall be 48 in (1220 mm) maximum. When x is 20 to 25 in (510 to 635 mm), then y shall be 44 in (1120 mm) maximum.

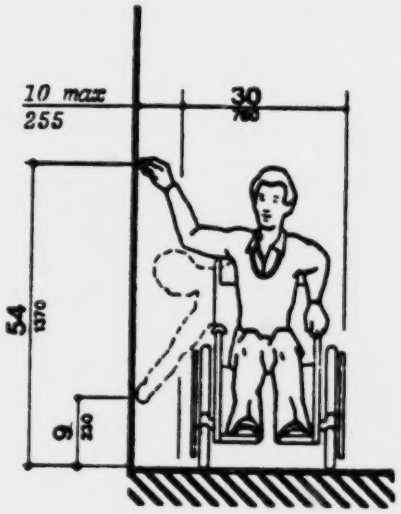
(b)
Maximum Forward Reach over an Obstruction

Fig. 5
Forward Reach

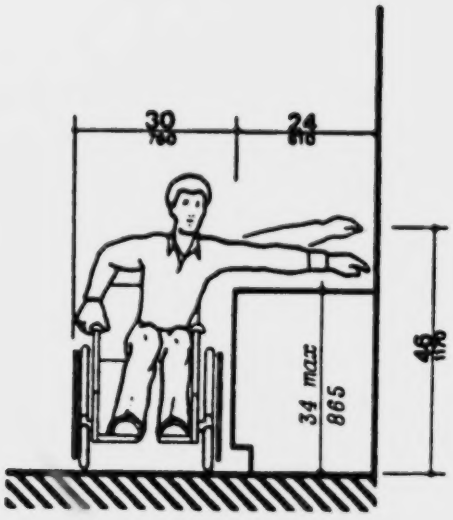
(Fed. Reg.)



(a)
Clear Floor Space
Parallel Approach



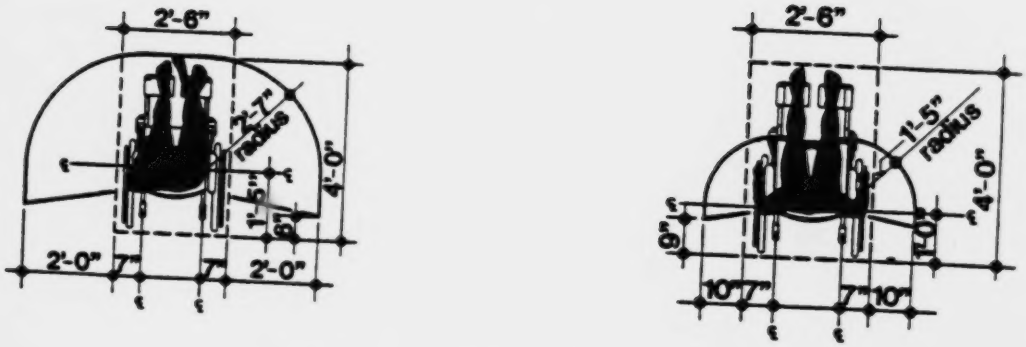
(b)
High and Low
Side Reach Limits



(c)
Maximum Side Reach
over Obstruction

Fig. 6
Side Reach

(Fed. Reg.)



Reach Ranges For Persons Seated In Wheelchairs

(Fed. Reg.)

Side Reach. If the clear floor space allows parallel approach bya person in a wheelchair, the maximum high side reach allowed shall be 54 in. (1370 mm) and the low side reach shall be no less than 9 in. (230 mm) above the floor. If the side reach is over an obstruction, the reach and clearances shall be as design guidelines for wheelchair side reach. (Fed. Reg.)

CONTROLS AND OPERATING MECHANISMS

General. Controls and operating mechanisms in accessible spaces, along accessible routes, or as part of accessible elements (for example, light switches, dispenser controls) shall comply with the provided guidelines. (Fed. Reg.)

Clear Floor Space. Clear floor space complying with the provided guidelines that allows a forward or a parallel approach by a person using a wheelchair shall be provided at controls, dispensers, receptacles, and other operable equipment. (Fed. Reg.)

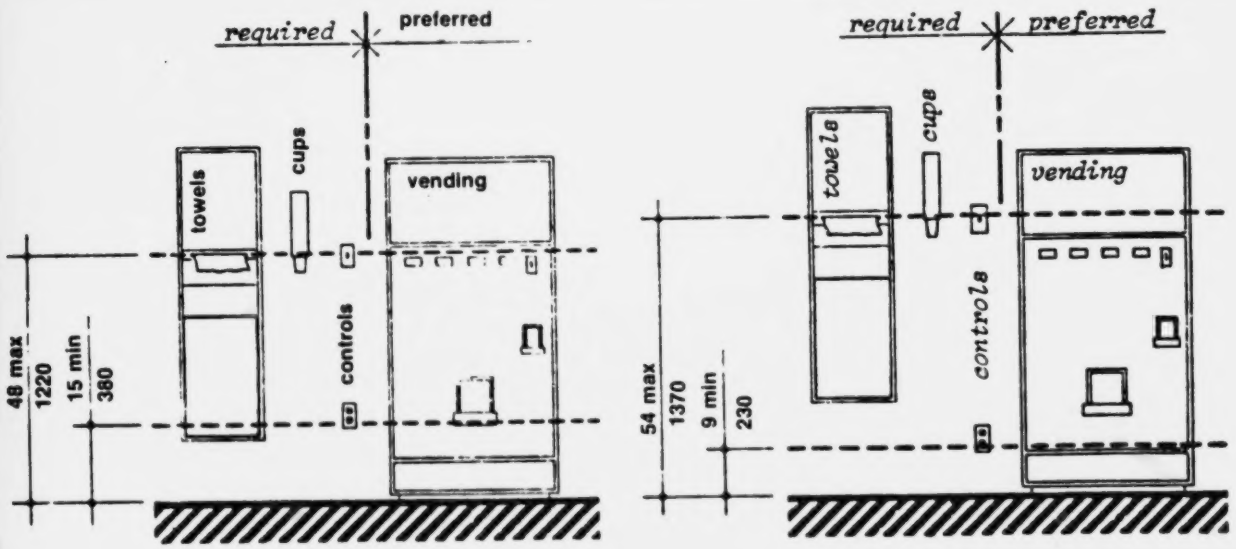
Height. The highest operable part of all controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the reach ranges specified in the provided guidelines. Except where the use of special equipment dictates otherwise, electrical and communications system receptables on walls shall be mounted no less than 15 in. (380 mm) above the floor. (Fed. Reg.)

Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf (22.2N). (Fed. Reg.)

SEATING, TABLES, AND WORK SURFACES

Seating. If seating spaces for people in wheelchairs are provided at tables, counters, or work surfaces, clear floor space shall be provided. Such clear floor space shall not overlap knee space by more than 19 in (485 mm). (Fed. Reg.)

Knee Clearances. If seating for people in wheelchairs is provided at tables, couters, and work surfaces, knee spaces at least 27 in (685 mm) high, 30 in (760 mm) wide, and 19 in (485 mm) deep shall be provided. (Fed. Reg.)



(a)
Forward Reach Possible

(b)
Side Reach Possible

Fig. A6
Control Reach Limitations

(Fed. Reg.)

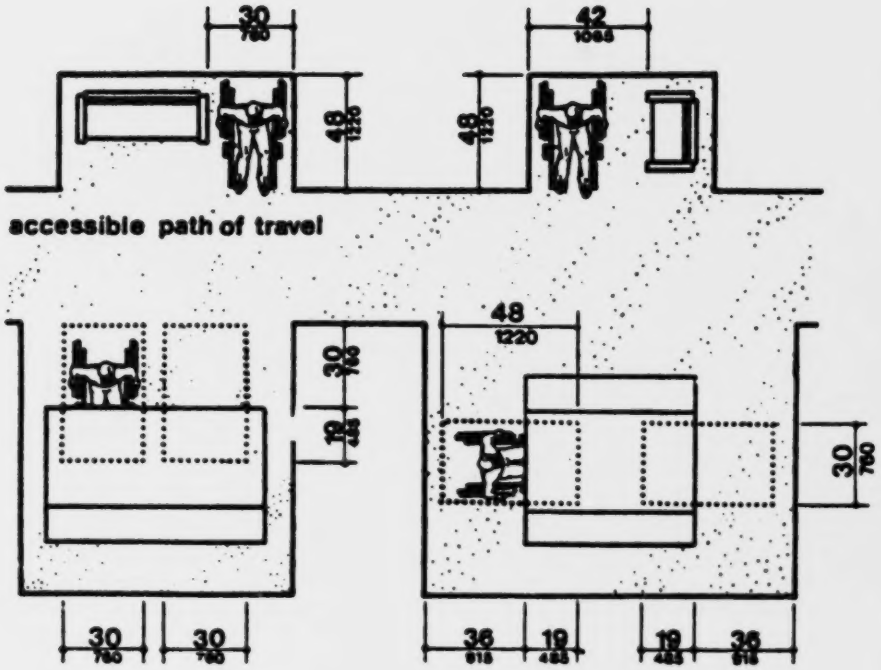
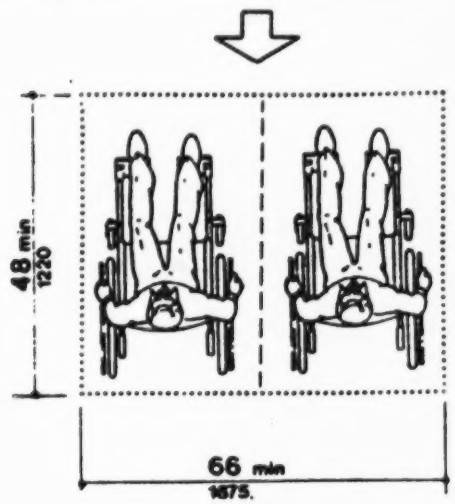
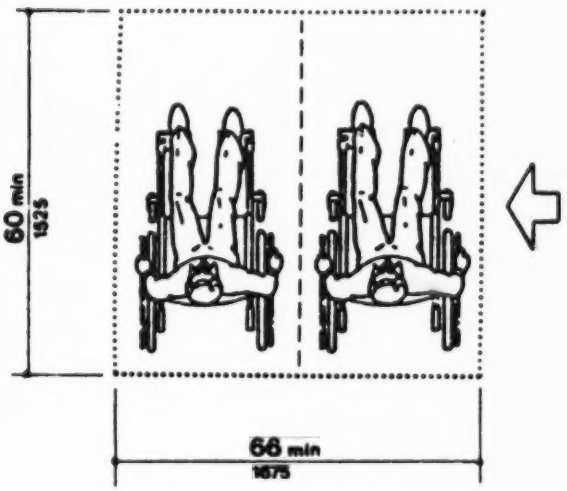


Fig. 45
Minimum Clearances for Seating and Tables

(Fed. Reg.)



(a)
Forward or Rear Access



(b)
Side Access

Fig. 46
Space Requirements for Wheelchair Seating Spaces in Series

(Fed. Reg.)

CIRCULATION WITHIN THE PARK

VEHICULAR PARKING

Parking Spaces. Parking spaces for disabled people shall be at least 96-in (2440 mm) wide and shall have an adjacent access aisle 60-in. (1525 mm) wide. Parking access aisles shall be part of the accessible route to the building or facility entrance and shall comply with the design guidelines for accessible routes. Two accessible parking spaces may share a common access aisle. Parked vehicle overhangs shall not reduce the clear width of an accessible circulation route. Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 in all directions. (Fed. Reg.)

Where parking spaces and loading zones are provided, the number to be reserved for the handicapped shall be as set forth in Table 1.

Table 1

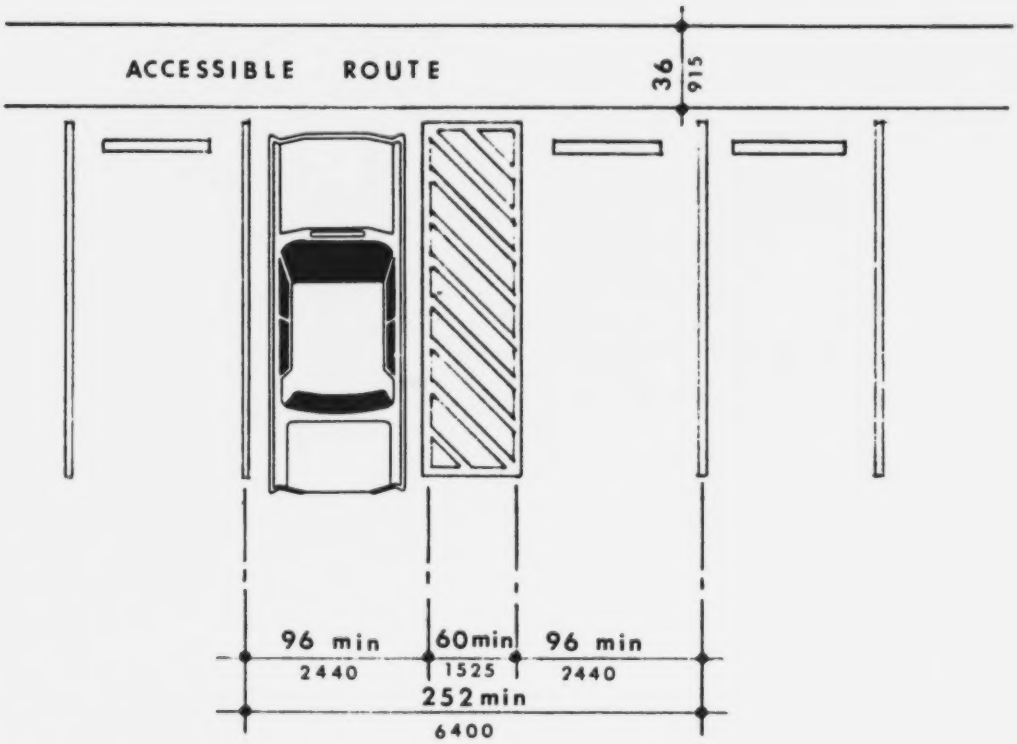
PARKING SPACES AND PASSENGER LOADING ZONES FOR HANDICAPPED

Total Spaces or Zones	Required Number to be Reserved for Handicapped
up to 25	1
25 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of Total
Over 1,000	20 Plus 1 For Each 100 over 1000

EXCEPTION: Where parking spaces are provided for Assembly areas use the Table provided under Amphitheatres and add 50%. (SCBBFD)

Location. Parking spaces for disabled people and accessible passenger loading zones that serve a particular building shall be the spaces or zones located closest to the nearest accessible entrance on an accessible route. In separate parking structures or lots that do not serve a particular building, parking spaces for disabled people shall be located on the shortest possible circulation route to an accessible pedestrian entrance of the parking facility. (Fed. Reg.)

Signage. Accessible parking spaces shall be designated as reserved for the disabled by a sign showing the symbol of accessiblity. Such signs shall not be obscured by a vehicle parked in the space. (Fed. Reg.)



Dimensions Of Parking Spaces

Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least 60-in (1525 mm) wide and 20-ft (6-m) long adjacent and parallel to the vehicle pull-up space. If there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp shall be provided. Vehicle standing spaces and access aisles shall be level with surface slopes not exceeding 1:50 in all directions. (Fed. Reg.)

Materials. Access aisles should be paved. Spaces may be well maintained gravel. (New Mexico)

Information. Signs should be located at site entrances specifying accessible parking and facilities. Handout information should be available at point of entry (or site headquarters) describing the levels of accessibility and showing the location of accessible parking and facilities. Signs indicating pathways and facilities should be visible from accessible parking. (New Mexico)

WALKWAYS, PATHS, AND TRAILS

Accessible Routes

Travel Distances. Many disabled people can move only at very slow speeds; for many, traveling 200 ft (61 m) could take about 2 minutes. This assumes a rate of about 1.5 ft/s (455 mm/s) on level ground. It also assumes that the traveler would move continuously. However, on trips over 100 ft (30 m), disabled people are apt to rest frequently, which substantailly increases their trip times. Resting periods of 2 minutes for ever 100 ft (30 m) can be used to estimate travel times for people with severly limited stamina. In inclement weather, slow progress and resting can greatly increase a disabled person's exposure to the elements. (Fed. Reg.)

Sites. Level, indirect routes or those with running slopes lower than 1:20 can sometimes provide more convenience than direct routes with maximum allowable slopes or with ramps. (Fed. Reg.)

Location. (1) At least one accessible route shall be provided from public transportation stops, accessible parking and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. (Fed. Reg.)

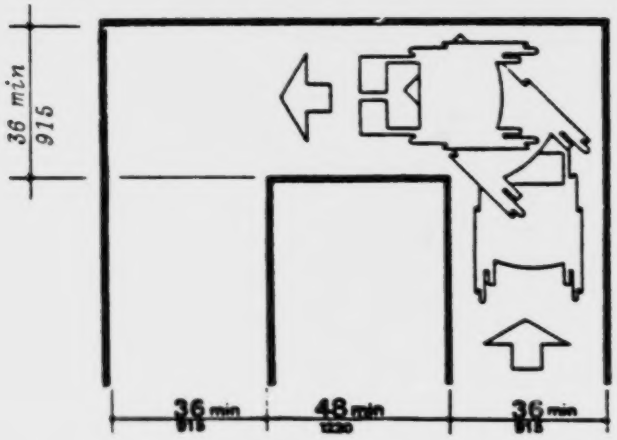
(2) At least one accessible route shall connect accessible buildings, facilities, elements, and spaces that are on the same site. (Fed. Reg.)

Width. The minimum clear width of an accessible route shall be 36 in. (915 mm) except at doors. If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as provided by the guidelines for accessible routes. (Fed. Reg.)

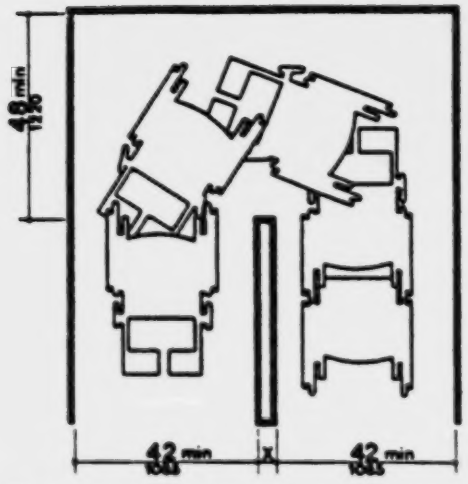
Passing Space. If an accessible route has less than 60-in (1525 mm by 1525 mm) shall be located at reasonable intervals not to exceed 200 ft. (61 m). A T-intersection of two corridors or walks is an acceptable passing place. (Fed. Reg.)

Protruding Objects

Guide dogs are trained to recognize and avoid hazards. However, most people with severe impairments of vision use the long cane as an aid to mobility. The two principal cane techniques are the touch technique, where the cane is held in a stationary position diagonally across the body with the cane tip touching or just above the ground at a point outside one shoulder and the handle or grip extending to a point outside the other shoulder. The touch technique is used primarily in uncontrolled areas, while the diagonal technique is used primarily in certain limited, controlled, and familiar environments. Cane users are often trained to use both techniques. (Fed. Reg.)



(a)
90° Turn



NOTE: Dimensions shown apply when x < 48 in (1220 mm).

(b)
Turns around an Obstruction

Fig. 7
Width of Accessible Route

(Fed. Reg.)

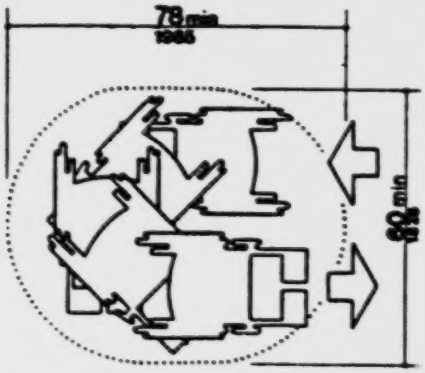


Fig. A2
Space Needed for Smooth U-Turn in a Wheelchair

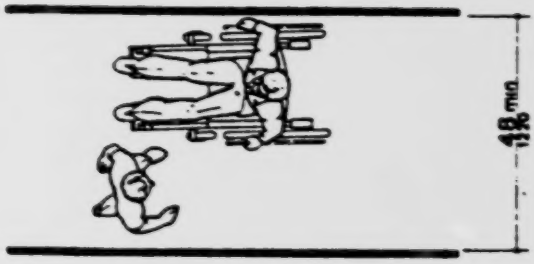
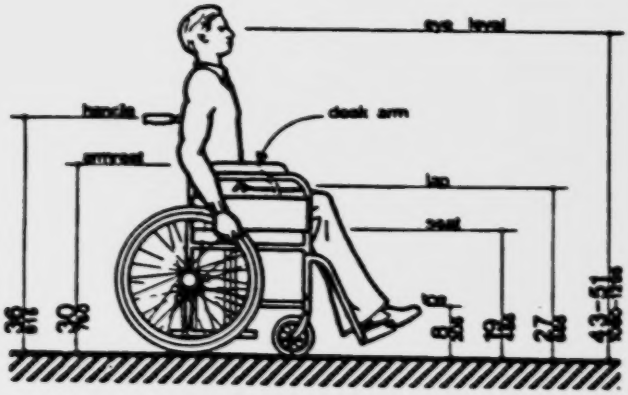
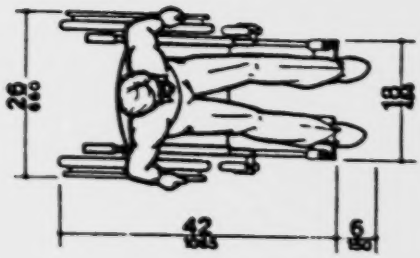


Fig. A1
Minimum Passage Width for One Wheelchair
and One Ambulatory Person





NOTE: Footrests may extend further for very large people.

Fig. A3
Dimensions of Adult-Sized Wheelchairs

(Fed. Reg.)

74

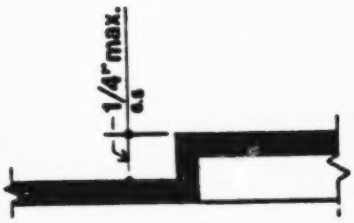


Fig. 7(c)
Changes in level

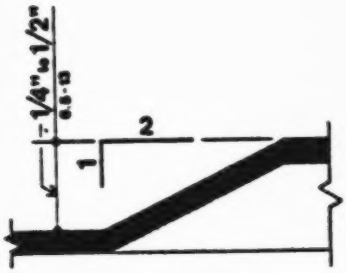


Fig. 7(d)
Changes in level

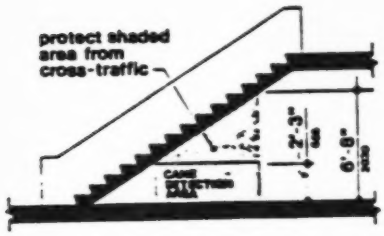


Fig. 8(c)
Overhead Hazards

(Fed. Reg.)

Potentially hazardous objects are noticed only if they fall within the detection range of canes (see Fig. A4). Visually impaired people walking toward an object can detect an overhang if its lowest surface is no higher than 27 in (685 mm). When walking alongside projecting objects, they cannot detect overhangs. Since proper cane and guide dog techniques keep people away from the edge of a path or from walls, a slight overhang of no more than 4 in (100 mm) is not hazardous. (Fed. Reg.)

Objects projecting from walls (for example, telephones) with their leading edges between 27 in. and 80 in. (685 mm and 2030 mm) above the finished floor shall protrude no more than 4 in. (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8(a)). Objects mounted with their leading edges at or below 27 in. (685 mm) above the finished floor may protrude any amount. Freestanding objects mounted on posts or pylons may overhang 12 in. (305 mm) maximum from 27in. to 80 in. (685 mm to 2030 mm) above the ground or finished floor. Protruding objects shall not reduce the clear width of an accessible route or maneuvering space. (Fed. Reg.)

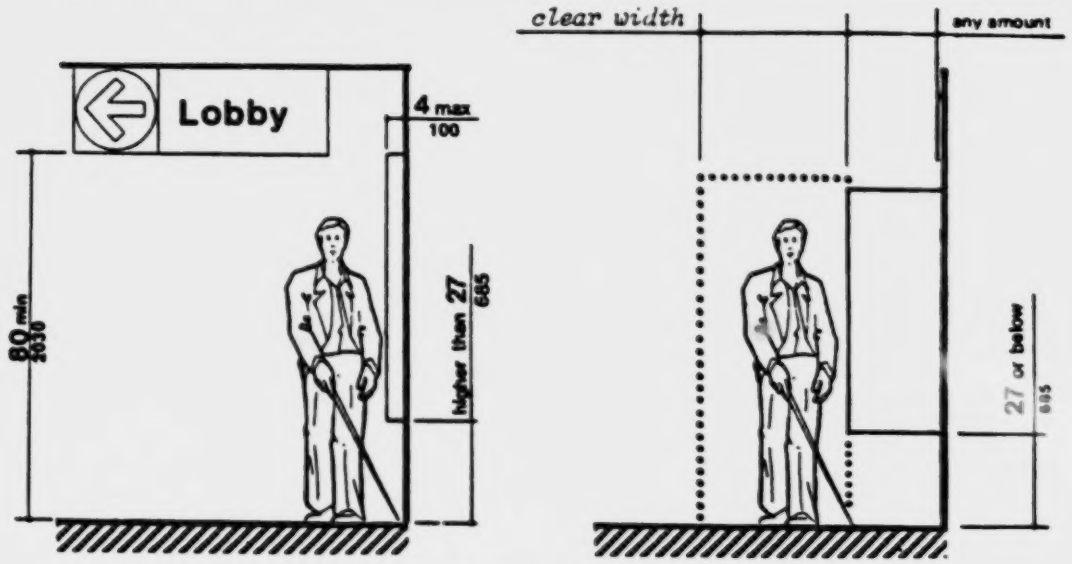
Head Room. Walks, halls, corridors, passageways, aisles, or other circulation spaces shall have 80 in. (2030 mm) minimum clear head room. If verticle clearance of an area adjoining an accessible route is reduced to less than 80 in., a barrier to warn blind or visually-impaired persons shall be provided. (Fed. Reg.)

Ground and Floor Surfaces

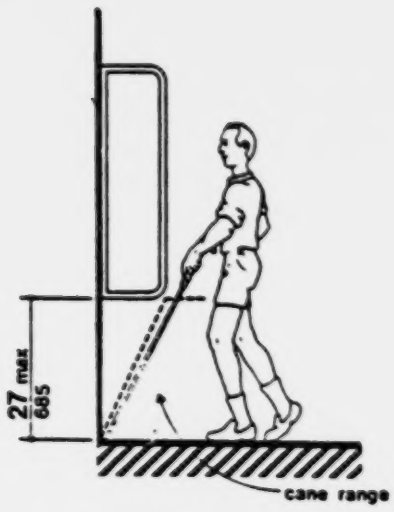
General. Ambulant and semiambulant people who have difficulty maintaining balance and those with restricted gaits are particularly sensitive to slipping and tripping hazards. For such people, a stable and regular surface is necessary for safe walking, particularly on stairs. Wheelchairs can be propelled most easily on surfaces that are hard, stable, and regular. Soft, loose surfaces such as shag carpet, loose sand, and wet clay, and irregular surfaces such as cobblestone, can significantly impede wheelchair movement. (Fed. Reg.)

Slip resistance is based on the frictional force necessary to keep a shoe heel or crutch tip form slipping on a walking surface under the conditions of use likely to be found on the surface. Although it is known that the static coefficient of friction is the basis of slip resistance, there is not as yet a generally accepted method ot evaluate the slip resistance of walking surfaces. (Fed. Reg.)

Cross slopes on walks and ground or floor surfaces can cause considerable difficulty in propelling a wheelchair in a straight line. (Fed. Reg.)



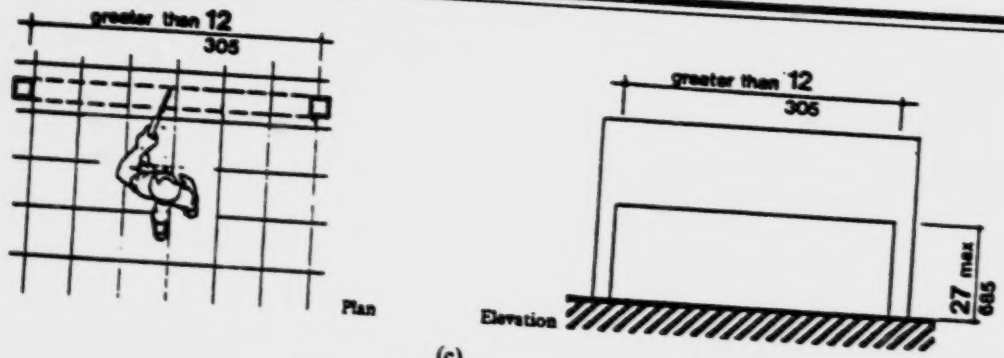
(a)
Walking Parallel to a Wall



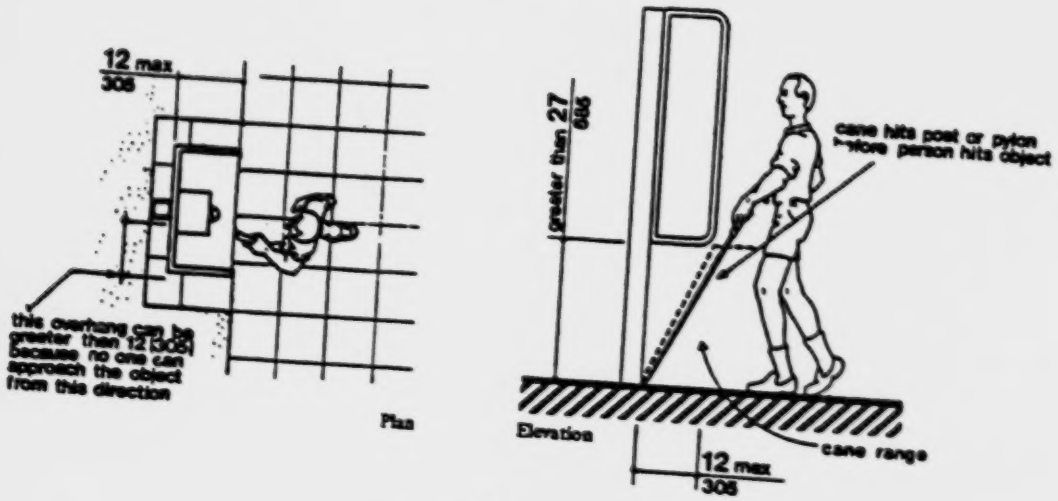
(b)
Walking Perpendicular to a Wall

Fig. 8
Protruding Objects

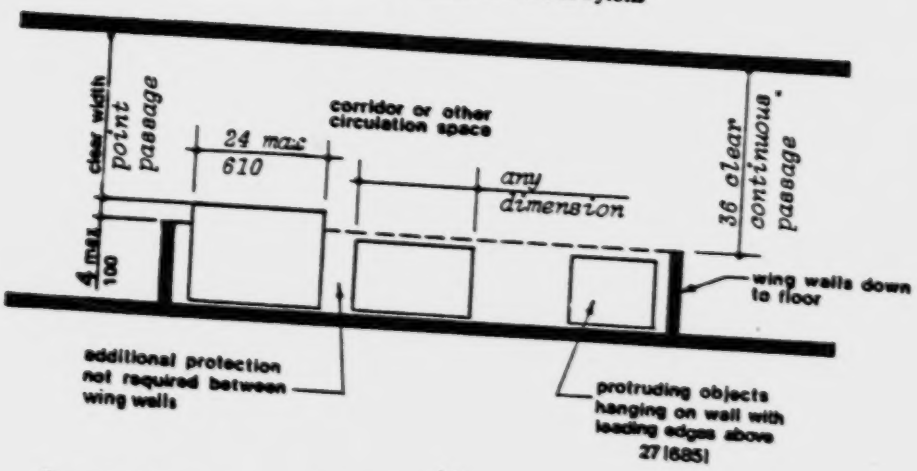
(Fed. Reg.)



(c)
Free-Standing Overhanging Objects



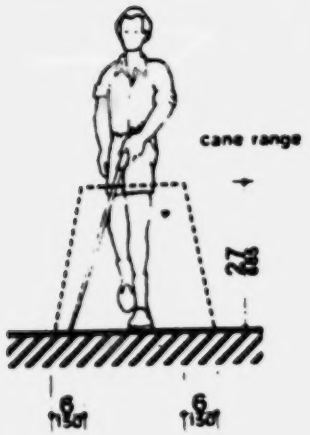
(d)
Objects Mounted on Posts or Pylons



(e)
Example of Protection around Wall-Mounted Objects and Measurements of Clear Widths

Fig. 8
Protruding Objects (*Continued*)

(Fed. Reg.)



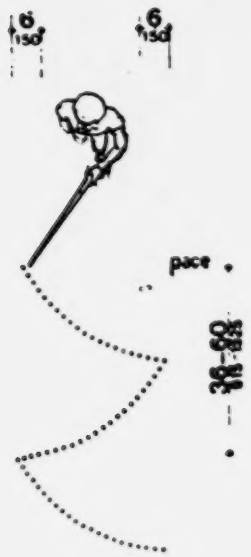


Fig A4
Cane Technique

(Fed. Reg.)

Ground and floor surfaces along accessible routes and in accessible rooms and spaces, including floors, walks, ramps, stairs, and curb ramps, shall be stable, firm, slip-resistant and shall comply with the guidelines for ground and floor surfaces. (Fed. Reg.)

Changes in Level. Changes in level up to 1/4 in. (6 mm) may be vertical and without edge treatment. Changes in level between 1/4 in. and 1/2 in (6 mm and 13 mm) shall be beveled with a slope no greater than 1:2. Changes in level greater than 1/2 in (13 mm) shall be accomplished by means of a ramp that complies with the guidelines provided for ramps. (Fed. Reg.)

Carpet. If carpet or carpet tile is used on a ground or floor surface, then it shall be securely attached; have a firm cushion, pad, or backing or no cushion or pad; and have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The maximum pile height shall be 1/2 in. (13 mm). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with the guidelines provided for ground and floor surfaces. If carpet tile is used on an accessible ground or floor surface, it shall have a maximum combined thickness of pile, cushion, and backing height of 1/2 in. (13 mm). (Fed. Reg.)

Gratings. If gratings are located in walking surfaces, then theyshall have spaces no greater than 1/2-in. (13 mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel. (Fed. Reg.)

Curb Ramps

Location. Curb ramps complying with the guidelines shall be provided wherever an accessible route crosses a curb. (Fed. Reg.)

Slope. Slopes of curb ramps shall comply with the guidelines provided. The slope shall be measured according to the provided guidelines. Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface, or accessible route shall not exceed 1:20. (Fed. Reg.)

Width. The minimum width of a curb ramp shall be 36 in. (915 mm), exclusive of flared sides. (Fed. Reg.)

Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, or where it is not protected by handrails or guardrails, then it shall have flared sides; the maximum slope of the flare shall be 1:10. Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp. (Fed. Reg.)

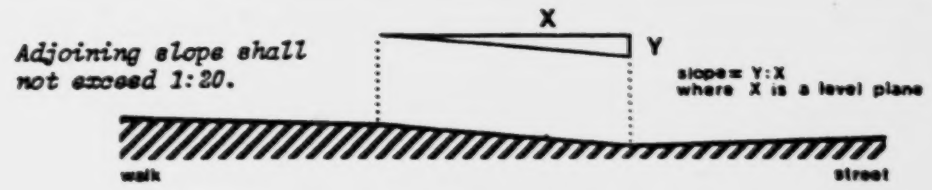
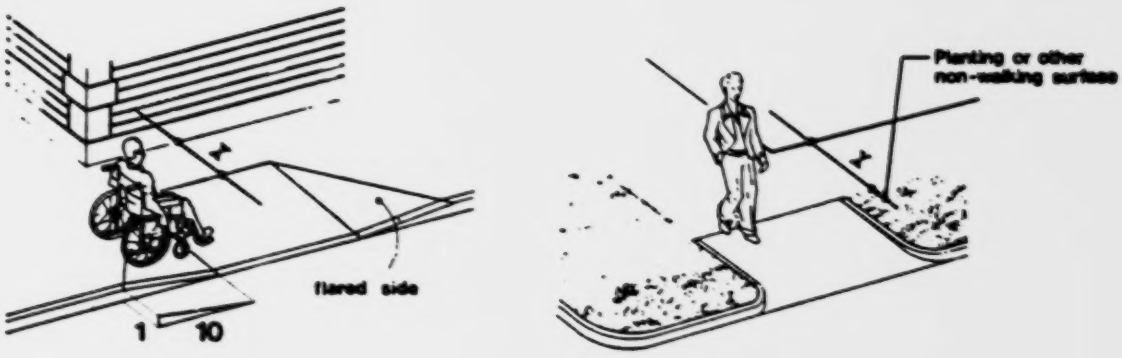


Fig. 11
Measurement of Curb Ramp Slopes



(a)
Flared Sides

(b)
Returned Curb

Fig. 12
Sides of Curb Ramps

If X is less than 48 in, then the slope of the flared side shall not exceed 1:12.

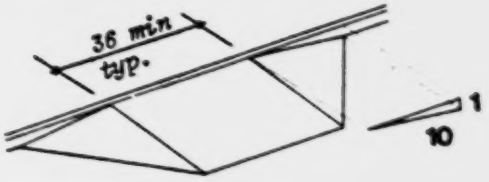
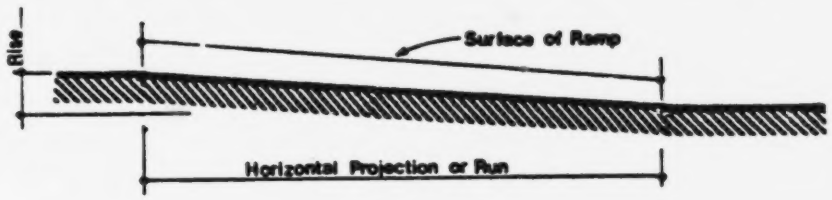


Fig. 13
Built-Up Curb Ramp

(Fed. Reg.)

Built-Up Curb Ramps. Built-up curb ramps shall be located so they do not project into vehicular traffic lanes. (Fed. Reg.)

Obstructions. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles. (Fed. Reg.)



Slope	Maximum Rise		Maximum Horizontal Projection	
	in	mm	ft	m
1:12 to ∠1:16	30	760	30	9
1:16 to ∠1:20	30	760	40	12

Fig. 16
Components of a Single Ramp Run and Sample Ramp Dimensions

(Fed. Reg.)

Ramps

General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with the provided guidelines. (Fed. Reg.)

Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall by 1:12. The maximum rise for any ramp run shall be 30 in. (760 mm). Curb ramps and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as shown in Table 2 if space limitations prohibit the use of a 1:12 slope or less. (Fed. Reg.)

Clear Width. The minimum clear width of a ramp shall be 36 in. (915 mm). (Fed. Reg.)

Landings. Ramps shall have level landings at the bottom and top of each run. Landings shall have the following features:

(1) The landing shall be at least as wide as the widest ramp run leading to it.

(2) The landing length shall be a minimum of 60 in. (1525 mm) clear.

(3) If ramps change direction at landings, the minimum landing size shall be 60 in. by 60 in. (1525 mm by 1525 mm). (Fed. Reg.)

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with the provided guidelines. (Fed. Reg.)

Handrails. If a ramp run has a rise greater than 6 in. (250 mm) or a horizontal projection greater than 72 in. (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps. Handrails shall comply with the provided guidelines and shall have the following features:

(1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in. (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface.

(3) The clear space between the handrail and the wall shall be 1-1/2 in. (38 mm). (Fed. Reg.)

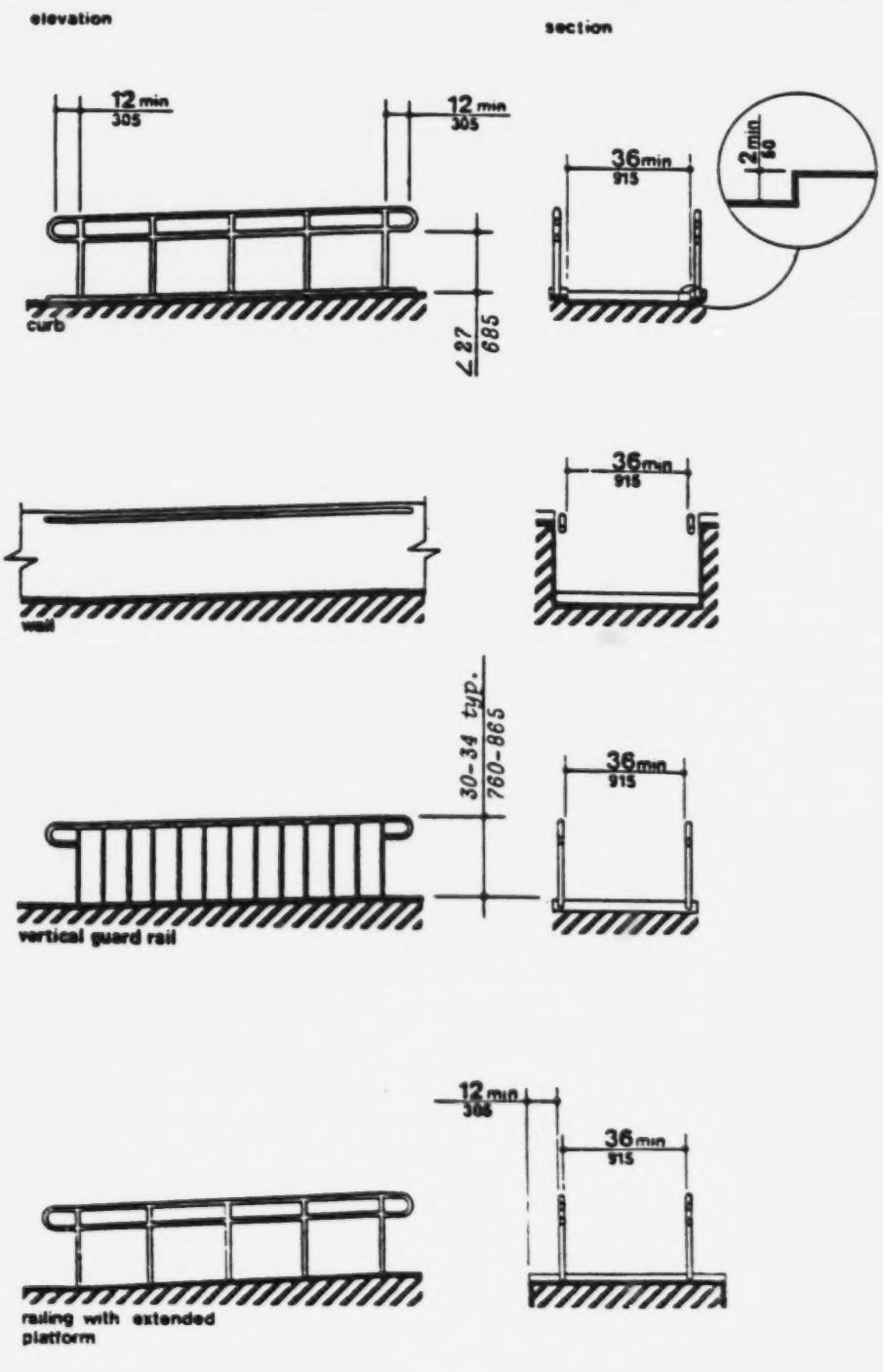


Fig. 17
Examples of Edge Protection and Handrail Extensions

(Fed. Reg.)

TABLE 2
Allowable Ramp Dimensions for Construction in
Existing Sites, Buildings, and Facilities

	Maximum Rise		Maximum Run	
Slope*	in.	mm.	ft.	m.
Steeper than 1:10 but no steeper than 1:8	3	75	2	0.6
Steeper than 1:12 but no steeper than 1:10	6	150	5	1.5

*A slope steeper than 1:8 not allowed. (Fed. Reg.)

(4) Gripping surfaces shall be continuous. (Fed. Reg.)

(5) Top of handrail gripping surfaces shall be mounted between 30 in. and 34 in. (760 mm and 865 mm) above ramp surfaces.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.

(7) Handrails shall not rotate within their fittings. (Fed. Reg.)

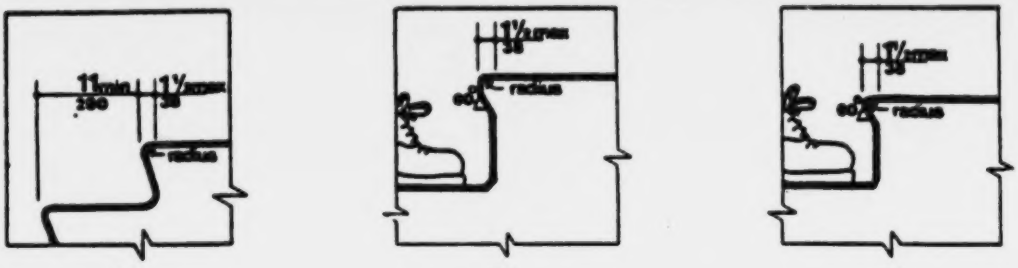
Cross Slope and Surfaces. The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall comply with the guidelines for slopes and surfaces. (Fed. Reg.)

Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a minimum of 2-in. (50 mm) high. (Fed. Reg.)

Outdoor Conditions. Outdoor ramps and their approaches shall be designed so that water will not accumulate on walking surfaces. (Fed. Reg.)

Stairs

Treads and Risers. On any given flight of stairs, all steps shall have uniform riser heights and uniform tread widths. Stair treads shall be no less than 11in. (280 mm) wide, measured from riser to riser. Open risers are not permitted on accessible routes. (Fed. Reg.)

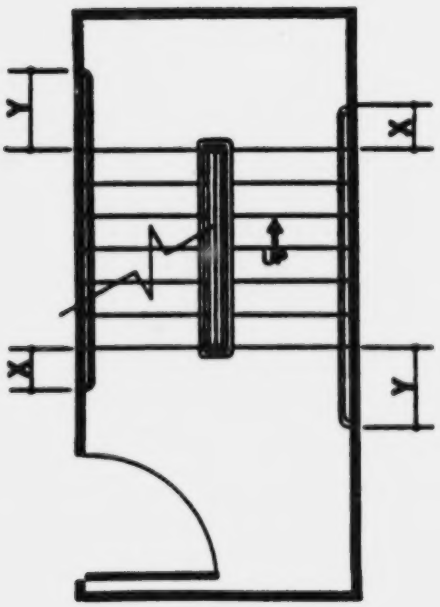


(a)
Flush Riser

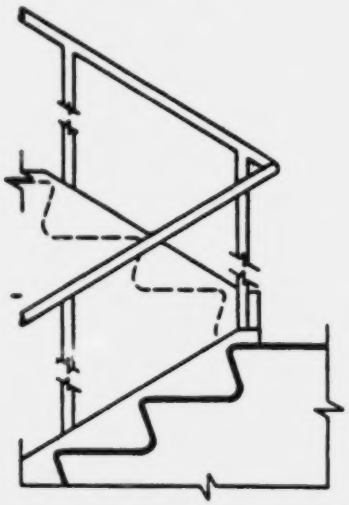
(b)
Angled Nosing

(c)
Rounded Nosing

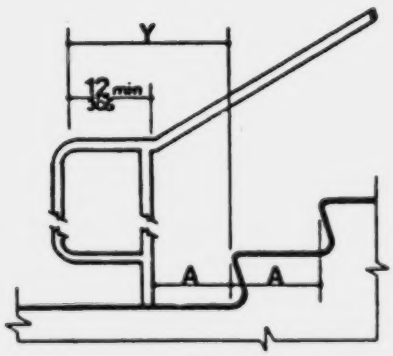
Fig. 18
Usable Tread Width and Examples of Acceptable Nosings



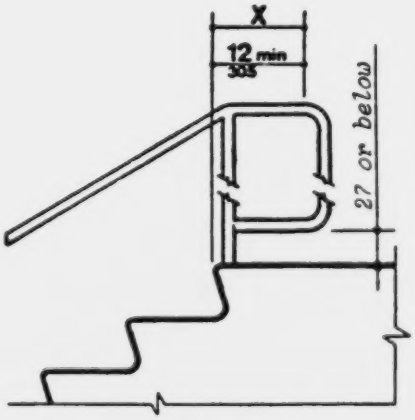
(a)
Plan



(b)
Elevation of Center Handrail



(c)
Extension at Bottom of Run



(d)
Extension at Top of Run

Fig. 19
Stair Handrails

(Fed. Reg.)

Nosings. The undersides of nosings shall not be abrupt. The radius of curvature at the leading edge of the tread shall be no greater than 1/2 in. (13 mm). Risers shall be sloped or the underside of the nosing shall have an angle not less than 60 degrees from the horizontal. Nosings shall project no more than 1-1/2 in. (38 mm). (Fed. Reg.)

Handrails. Stairways shall have handrails at both sides of all stairs. Handrails shall comply with the provided guidelines (see ramps) and shall have the following features:

(1) Handrails shall be continuous along both sides of stairs. The inside handrail on switchback or dogleg stairs shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in. (305 mm) beyond the top riser and at least 12 in. (305 mm) plus the width of one tread beyond the bottom riser. At the top, the extension shall be parallel with the floor or ground surface. At the bottom, the handrail shall continue to slope for a distance of the width of one tread from the bottom riser; the remainder of the extension shall be horizontal. Handrail extensions shall comply with the guidelines for handrails.

(3) Gripping surface shall be uninterrupted by newel posts, other construction elements, or obstructions.(Fed. Reg.)

Tactile Warnings

Tactile Warnings on Doors to Hazardous Areas. Doors that lead to areas that might prove dangerous to a blind person (for example, doors to loading platforms, boiler rooms, stages, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull, or other operating hardware. This texture surface may be made by knurling or roughing or by a material applied to the contract surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those to hazardous areas.

Standardization. Texture surfaces for tactile door warnings shall be standard within a building, facility, site, or complex of buildings. (Fed. Reg.)

Pathways and Trails

Our recreation areas contain a wide variety of pathways and trails. Paths are the primary means for travel between activity areas and should be safe, accessible and convenient. On the other hand, trails which are themselves the recreation activity (such as hiking, biking, and nature trails) can be designed to meet a variety of needs and interest. (HCRS)

Trails

Provision of recreation trails, like all recreation facilities, should reflect the range of people's preferences and abilities.

Benefits to both users and providers of such a system include:

- encouraging individual choice of a trail based on the degree of difficulty one can expect to encounter;
- eliminating stigmatizing labels, i.e., senior citizens/handicapped trail;
- providing an easy framework for inventory of the total system of recreational trails offered. (HCRS)
- The spatial and sensuous qualities shall be considered in the designing of interpretive trails.
- Trails should follow a logical sequence to prevent the user's loss of sense of direction.
- Trails should pass unique land forms inherent to the site.
- Signs shall be located at the beginning of the trails and at nodes of interest.
- Changes of texture shall be used to signify rest areas, unique vegetation, important features of the site, etc. (Univ. of Georgia)

Pathways and Trails

(HCRS)

Trail Surfaces

In large part, the surface of a trail determines its accessibility. Balancing topography with the need to provide a wide range of trail accessibility, one can choose from a variety of trail surfaces. In order of decreasing accessibility, possible choices include concrete; asphalt; wooden planking (over wet, fragile or sandy areas); solidly-packed, fine crushed rock; well-compacted pea gravel; bound wood chips; coarse gravel; rock; unbound woodchips; sand. By using surfaces in combination with other features such as slope, trail width, and rest areas, recreation providers can satisfy a large and extremely varied constituency. (HCRS)

Pathways

Pathway Surface Types. The following list describes a few of the surfacing materials that can be used for pathways and other outdoor activity areas. The list is limited to a few materials that can be used effectively at different levels of accessibility. Other possibilities should be considered if appropriate to local conditions and needs. (New Mexico)

Concrete Pathways. Concrete must be poured on a well prepared area that is clean and free of debris. Finishes should have a light texture, such as a broom finish, so that the surface will not slippery when wet. The texture should drain water off the pathway so it does not stand or freeze. Texture and joints 1/2 in. high max. (New Mexico)

Asphalt Pathways. Asphalt pathways may be used if they are carefully constructed and maintained. Typical construction should include:

- Sub-grade cleaned and cleared to a depth of 6 inches below finished grade, compacted to 95%. A soil sterilant may be utilized to control weed growth.
- 4 inch base course of course aggregate, compacted to 95%.
- Primer coat.
- 2 inch surface course of hot mix bituminous concrete, compacted to 95% density. An epoxy finish, coated with sand may be used to give a natural appearance and reduce softening problems in hot climates. (New Mexico)

Pathways and Trails

(HORS)

47

Asphalt surface may be become soft in very hot climates, causing difficulty for people in wheelchairs. Asphalt should not be used as a material in very hot, sunny locations. (New Mexico)

Maintenance is important so that the pathway is not degraded by weeds, cracks or erosion. (New Mexico)

Pavers on Concrete. Brick, tile or concrete pavers, set on a properly constructed concrete base can provide an acceptable pathway surface. Joints between pavers should meet the requirements of the guidelines for Ground and Floor Suraces. (New Mexico)

Crushed Stone. Crushed stone can form an accessible surface if it is correctly designed and constructed.

- Sub-grade cleaned and cleared to a depth of 6 inches below finished grade, compacted to 95% density. The use of a soil sterilant is recommended.
- 4 inch base course, 3/4 inch crushed stone, compacted to 95% density. A binder of 2-3% Portland cement with water and gravel may be used.
- 2 inch surfacing course of crusher fines, rolled and compacted to 95% density. Cement binder recommended.
- Maintenance is essential to insure a consistent surface. (New Mexico)

Wood Decking. Wood decking may be used as a pathway and flooring surface for all levels of accessibility, providing joints meet recommended guidelines. Warpage and movement of the material must also be controlled. (New Mexico)

Other Materials.

Pavers on Sand: Brick, tile, concrete or other paving materials set in sand are not recommended for most pathways. Movement of the material over time may cause unacceptable irregularities. Suitable for some pathways if properly installed. (New Mexico)

Grass: A grass surface can be a passable low-traffic surface if it is level and well maintained. (New Mexico)

Untreated soil: Untreated soil is highly variable. Some situations may be acceptable for certain low-traffic pathways if level and maintained. Soil is likely to change significantly due to precipitation, erosion, wear, etc. (New Mexico)

Gravel: Loose gravel is not recommended. It can be very difficult for a person in a wheelchair or with walking aides. Packed gravel may be suitable for some low-traffic pathways. (New Mexico)

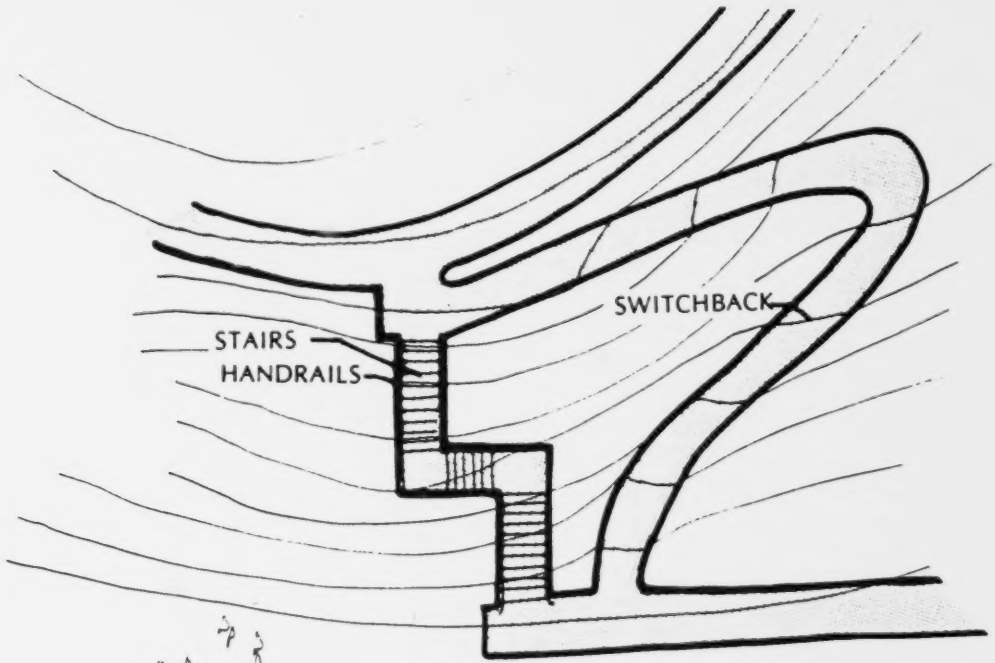
Rest Areas and Shelters. 5 ft. by 5 ft. (min.) level space for resting every 200 ft. to 400 ft. Seating and shelter every 1/8 mile to 1/4 mile. (New Mexico)

Curbs and Railings. Provide 2" high curb at the edge of paths that slope at the side. Provide railings at hazardous pathway edges. (New Mexico)

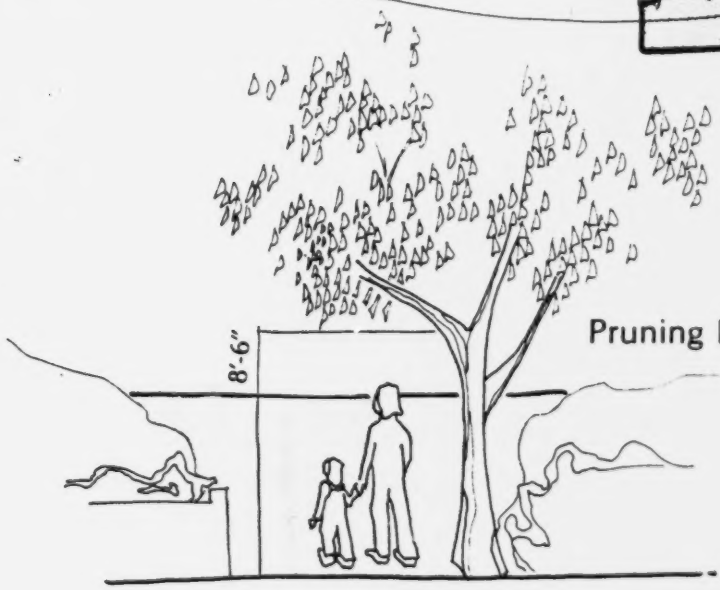
Pathway Edge. Provide a distinct change of material at the edge of the pathway. (New Mexico)

Surface and Texture. Firm surface with moderate texture. (New Mexico)

Gates and Doorways. Doorways and gates must have a clear opening width of 32 inches. A clear approach space must be provided. (New Mexico)



Switchback



Pruning Height

(HCRS)

Pathways In Developed Areas

Cross slope of pathways should be just enough to provide drainage about 2%. (HCRS)

Expansion joints should be less than 1/2." (HCRS)

Gratings for storm drainage should be placed off of pathways. Where they do occur, openings should be less than 1/2." (HCRS)

Prune tree branches overhanging pathway to a height of 8'-6". (HCRS)

If pruning will damage or detract from tree, consider rerouting path around it. (HCRS)

Use separate textural and color cues to indicate:

- high risk areas such as steep embankment, steps, or intersections and
- functional changes such as seating areas, fountains, or palazas. (HCRS)

Tactile cues alert the blind as well as the sighted who are approaching an area of concern or interest. (HCRS)

Keep in mind that differential settling, if it occurs, must be less than 1/2". (HCRS)

Differentiate color of material when change in level occurs
- Otherwise the visually impaired may overlook stairs, ramps or steps. (HCRS)

Bold patterns or colors may be disorienting over a continuous surface. (HCRS)

Pathway Ramps

Ramp Width. 3 ft. minimum required width. If possible ramps should be the same width as a pathway 4 ft. min., 5 ft. recommended. (New Mexico)

Ramp Handrails. Use railings of both sides of ramps that rise 6 in. or more. Extend railings past the top and bottom of the ramp 12 in. min. (18 in.
preferred). (New Mexico)

Diameter of grip surface 1.25 to 1.5 inches. (1.5 to 2 inches recommended for exterior railings). (New Mexico)

Must be free of sharp edges to allow hand to slide. Gripping surface must be continuous for inner rail at dogleg or switchback ramps. (New Mexico)

Railings must be spaced exactly 1.5 in. or more than 18 in. from a wall or other vertical surface. (New Mexico)

Top railing mounted 32 to 34 in. above ramp surface. (New Mexico)

ENTRANCES AND EXITS TO BUILDINGS

General. All doors to accessible spaces and elements and along accessible routes shall comply with the following requirements. (Fed. Reg.)

Revolving Doors and Turnstiles. Revolving doors or turnstiles shall not be the only means of passage at an accessible entrance or along an accessible route. An accessible gate or door shall be provided adjacent to the turnstile or revolving door and shall be designed as to facilitate the same use pattern. (Fed. Reg.)

Gates. Gates, including ticket gates, shall meet all applicable specifications of the guidelines. (Fed. Reg.)

Double-Leaf Doorways. If doorways have two independently operated door leaves, then at least one leaf shall meet the specifications provided. That leaf shall be an active leaf. (ANSI)

Clear Width. Doorways shall have a minimum clear opening of 32 in. (815 mm) with door open 90 degrees, measured between the face of the door and the stop. Openings more than 24 in. (610 mm) in depth shall comply with the guidelines provided. However, doors not requiring full user passage, such as shallow closets, may have the clear opening reduced to 20 in. (510 mm) minimum. (Fed. Reg.)

Maneuvering Clearances at Doors. Minimum maneuvering clearances for doors that are not automatic shall be as provided by the guidelines. The floor or ground area within the required clearances shall be level and clear. Entry door to acute care hospital bedrooms for in-patients shall be exempt from the requirement for space at the latch side of the door if the door is at least 44 in. (1120 mm) wide. (Fed. Reg.)

Two Doors in Series. The minimum space between two hinged or pivoted doors in series shall be 48 in. (1220 mm) plus the width of any door swinging into the space. Doors in series shall swing either in the same direction or away from the space between the door. (Fed. Reg.)

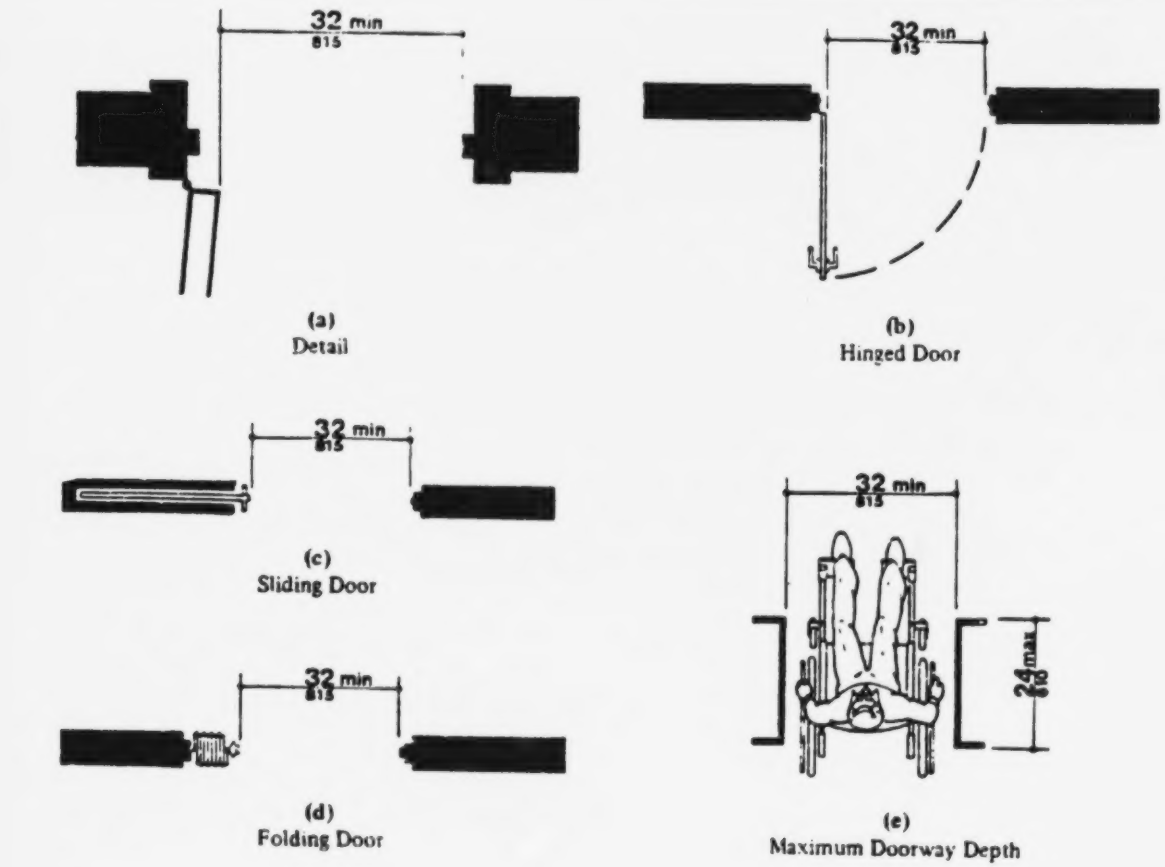
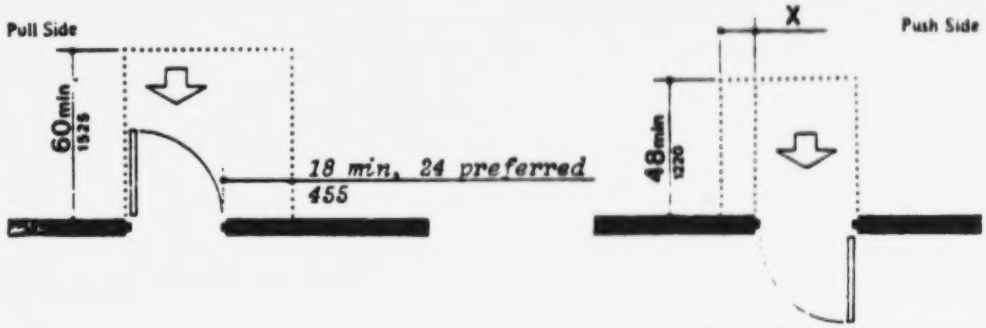


Fig. 24
Clear Doorway Width and Depth

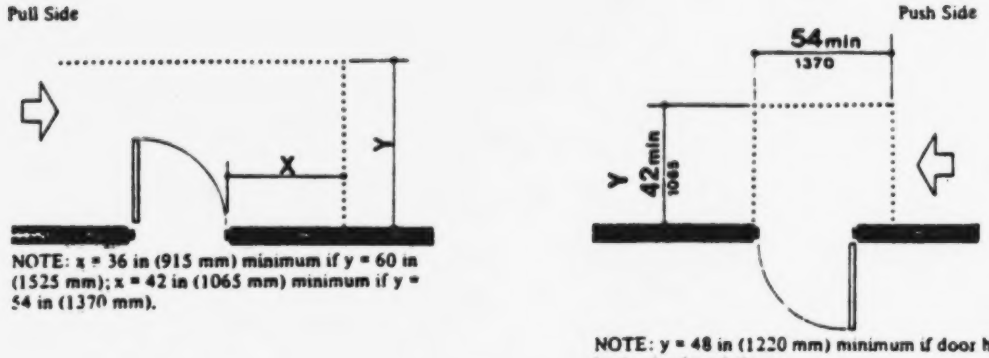
(Fed. Reg.)



Note: x = 12 in (305 mm) if door has both a closer and latch.

(a)

Front Approaches – Swinging Doors

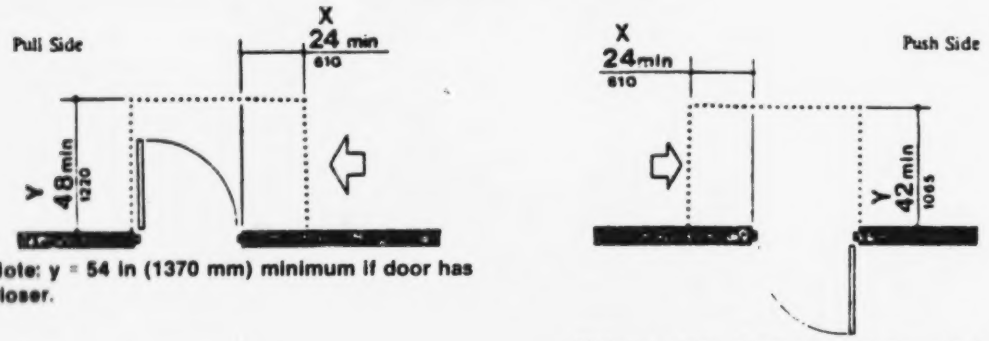


NOTE: x = 36 in (915 mm) minimum if y = 60 in (1525 mm); x = 42 in (1065 mm) minimum if y = 54 in (1370 mm).

NOTE: y = 48 in (1220 mm) minimum if door has both a latch and closer.

(b)

Hinge Side Approaches – Swinging Doors



Note: y = 54 in (1370 mm) minimum if door has closer.

Note: y = 48 in (1220 mm) minimum if door has closer.

(c)

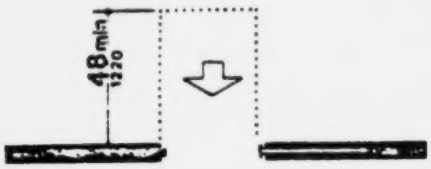
Latch Side Approaches - Swinging Doors

Note: All doors in alcoves shall comply with the clearances for front approaches.

Fig. 25

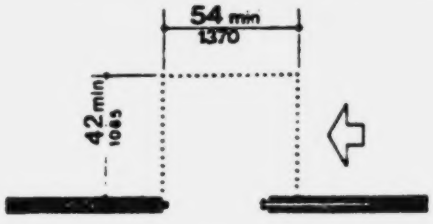
Maneuvering Clearances at Doors

(Fed. Reg.)



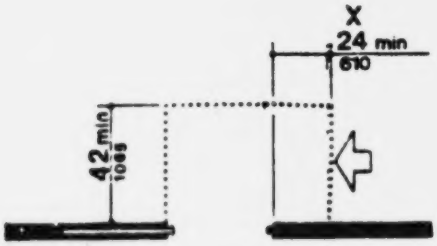
(d)

Front Approach - Sliding Doors and Folding Doors



(e)

Slide Side Approach - Sliding Doors and Folding Doors



(f)

Latch Side Approach – Sliding Doors *and Folding Doors*

NOTE: All doors in alcoves shall comply with the clearances for front approaches.

Fig. 25
Maneuvering Clearances at Doors (*Continued*)

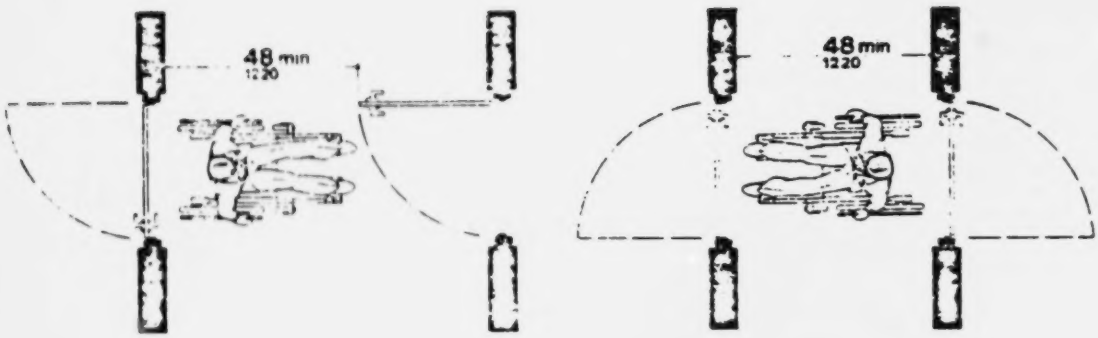


Fig. 26
Two Hinged Doors in Series

(Fed. Reg.)

Thresholds at Doorways. Thresholds at doorways shall not exceed 3/4 in. (19 mm) in height for exterior sliding doors or 1/2 in (13 mm) for other types of doors. Raised thresholds and floor level changes at accessible doorways shall be beveled with a slope no greater than 1:2 (Fed. Reg.)

Door Hardware. Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. In dwelling units, only doors at accessible entrances to the unit itself shall comply with the requirements of this paragraph. Doors to hazardous areas shall have hardware complying with the guidelines provided for tactile warnings. Mount no hardware higher than 48 in. (1220 mm) above finished floor. (Fed. Reg.)

Door Closers. If a door has a closer, then the sweep period of the closer, shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 in. (75 mm) from the latch, measured to the leading edge of the door. (Fed. Reg.)

Door Opening Force. The maximum force for pushing or pulling open a door shall be as follows:

(1) Fire doors shall have the minimum opening force allowable by the appropriate administrative authority.

(2) Other doors:

(a) exterior hinged doors: 8.5 lbf (37.8N) (ANSI)

(b) interior hinged doors: 5 lbf (22.2N) (Fed. Reg.)

(c) sliding or folding doors: 5 lbf (22.2N) (Fed. Reg.)

These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position. (Fed. Reg.)

Service Entrances. A service entrance shall not be the sole accessible entrance unless it is the only entrance to a building or facility (for example, in a factory or garage). (Fed. Reg.)

SWIMMING

BEACHES

The sandy beaches that make swimming and sunbathing so popular actually prevent some of us from reaching the water. Soft, unstable sand impedes anyone with mobility problems. Therefore, good access to a beach site requires consideration three separate areas:

Pathway from parking/bath-house/concession to the beach.

Pathway from beach to water.

Entering the water. (HCRS)

Pathway from Parking to Beach

Requires a firm stable path such as concrete, asphalt or wood plank 4' to 5' wide.

Handrails, 36' high, assist path users but may restrict movements of maintenance vehicles. (HCRS)

Pathway from Beach to Water

Stablized sand or wood plank minimizes impact to beach while still providing acceptable access.

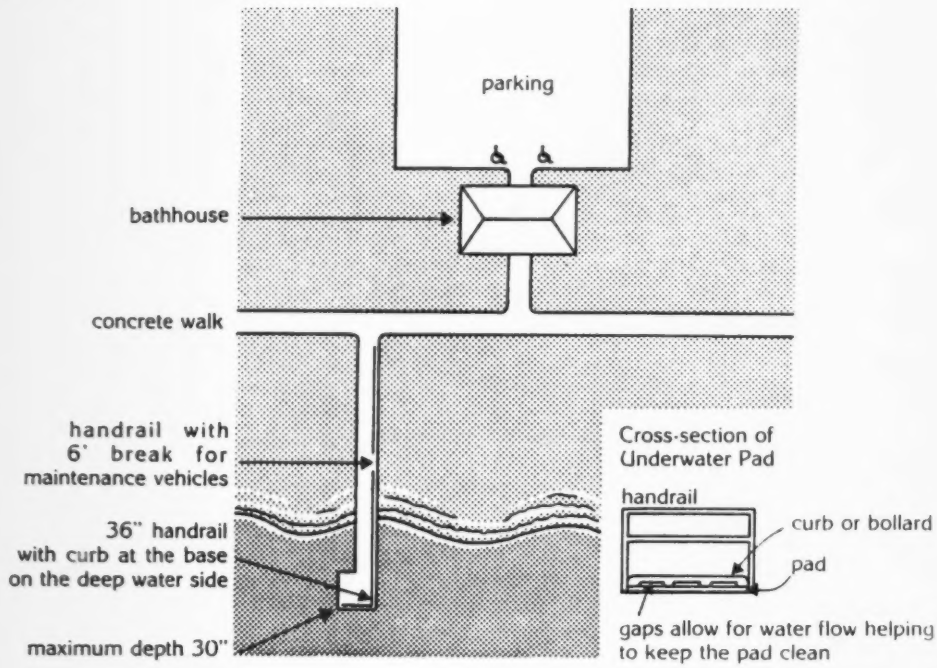
A wooden boardwalk built in sections can be used seasonally in some cases.

Repair and maintenance of the boardwalk is usually limited to periodically scraping algae and sand from the path and removing hand-railings before winter.

Sand stabilized with hardened clay will need to be reconstructed each season.

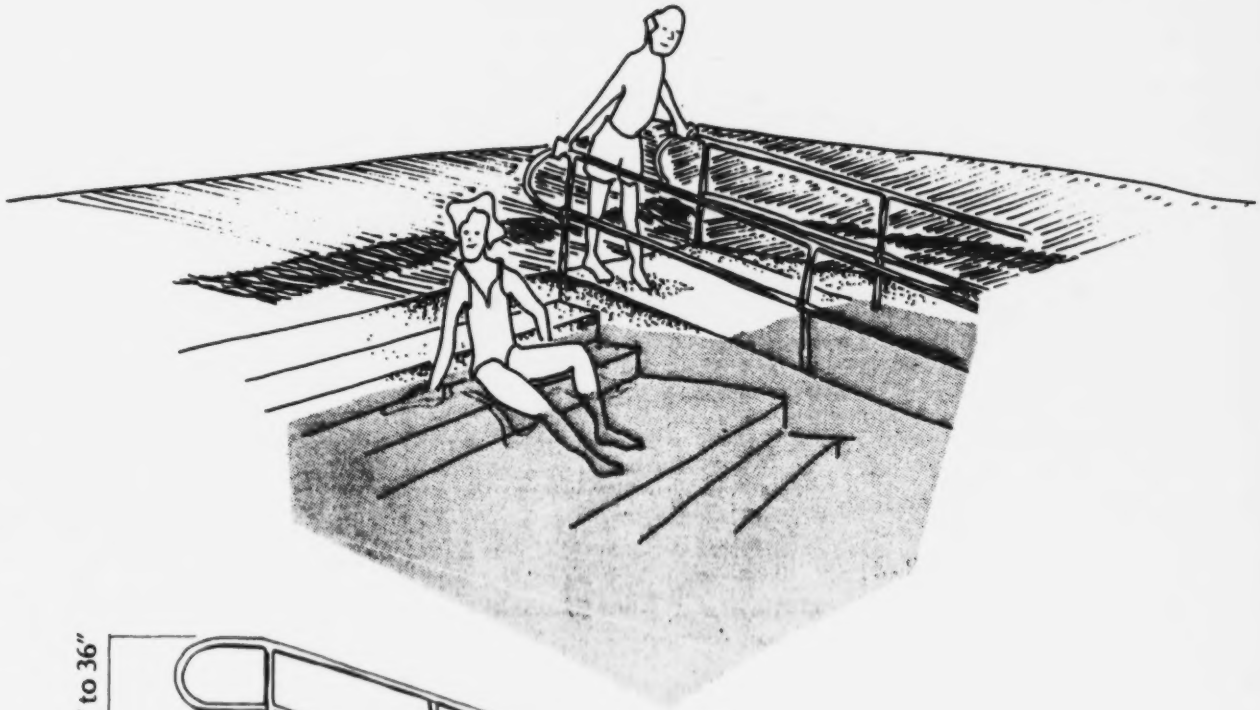
Handrails may obstruct view or movement across beach and should be used with discretion. (HCRS)

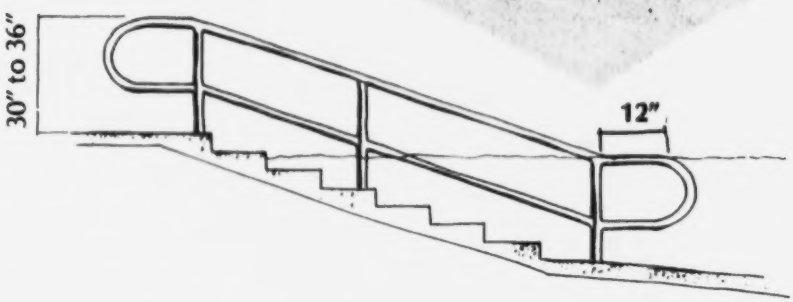
Beaches

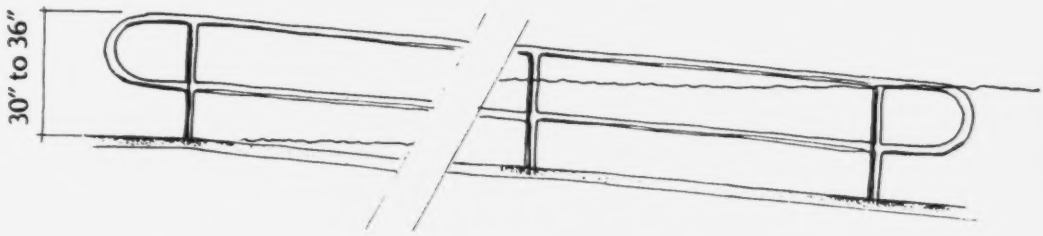

parking
bathhouse
concrete walk
handrail with 6' break for maintenance vehicles
36" handrail with curb at the base on the deep water side
maximum depth 30"
Cross-section of Underwater Pad
handrail
curb or bollard
pad
gaps allow for water flow helping to keep the pad clean

(Indiana)

Swimming







(HCRS)

Entering the Water

Provide handrails 36" high and sloped curb along edge of platform to gently stop wheelchairs.

The handrailing gives added assurance to people in the water or on the platform and serves as a grab bar for beginning swimmers.

A rubber mat (laid directly on the sand) can also improve access to the water. Although it offers the swimmer less support, it is less subject to water erosion or displacement by waves. (HCRS)

POOLS

A truly accessible and usable pool encourages each of us to have fun and participate to the best of our ability. Design considerations such as ramps, handrails, and textured surfaces can be easily incorporated into the modification of older pools and the design of new facilities.

Give people the option of entering the water from a ramp with handrails or from wide steps where they can also sit and relax.

Both stairs and ramps should have slip-resistant surface.

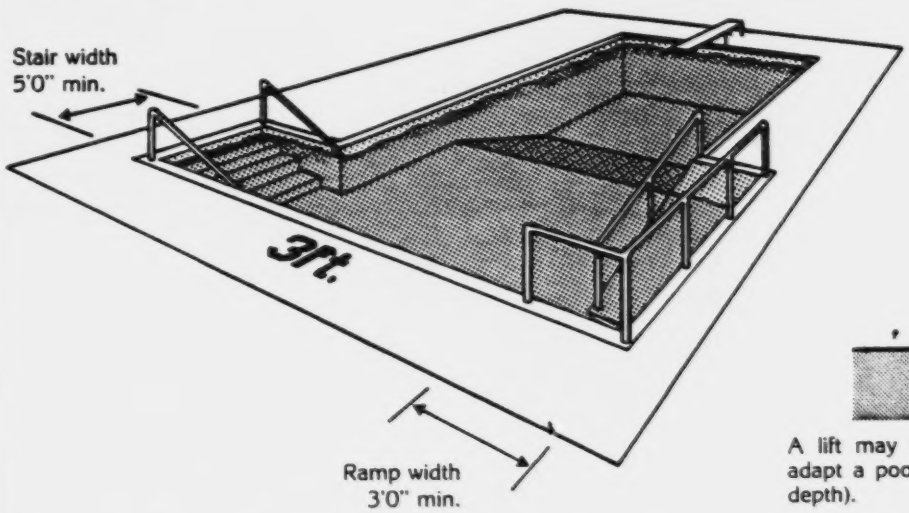
Provide handrails 2'-6" to 3'-0" high along ramp.

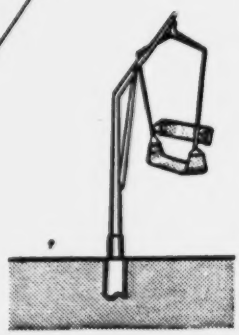
Slope of ramp should be 1:12 or less.

A ramp 3'-0" wide allows an individual to grasp both rails at once whereas a wider ramp allows two people to pass freely. (HCRS)

Pool entry may take several forms. Several types of mechanical lifts are available on the market. The most popular type is illustrated. This type fits into a sleeve on the deck and is removable. Removable types of lifts prevent children from playing on the lift when not in use. The lift is the least desirable form of entry but may be used to adapt a pool. (Indiana)

Swimming Pools





A lift may also be used to adapt a pool (mounted at 4' depth).

(Indiana)

6i

Use color and textural cues to indicate edge and other high risk areas.

Use color and textural cues to indicate edge and other high risk areas.

Use slip-resistant surface on walkways near pool.

Dressing rooms, bathrooms, and services accessible by firm paths These facilities should also conform to ANSI standards. (HCRS)

LAKES

Swimming areas at lakes should conform with guidelines for:

-beaches if the swimming area has a beach.

-pools if the swimming area has a pier or dock.

-both if the swimming area has a beach and a pier/dock.

BOAT DOCKS

ACCESS TO BOATING FACILITIES

A properly designed dock provides safety without restricting access to boats.

> Access to dock site should be across a hard-surfaced path.
>
> Ramps should have a slope no greater than 1:12, although this may be difficult to achieve for floating docks in tidal waters.
>
> Ramps 3'to 5' wide allow unencumbered access to docks.
>
> Easy-to-grasp safety railings 30" to 36" high should be provided in all areas where they will not interfere with boating activites. (HCRS)

A boat transfer facility such as a dock or pier should be considered an extension of a pathway system. The requirements for pathways and ramps also apply to boating facilities such as gangways, bridges, docks, etc. (New Mexico)

Particular attention must be paid to locations with changing water levels. Connections between the shore and a dock must not be too steep at low water levels. (New Mexico)

BOAT TRANSFER FACILITIES

Methods used by people with disabilities to transfer to boats vary widely, depending on the topography of the waterfront, the type of boat, available facilites, the types of disability, and personal preferences.

The most important types of transfer facilities include fixed docks and piers, floating docks and shore ramps or banks. (New Mexico)

Shore Transfer

Shore transfers may be made with the boat on the shore or in the water. If the bank slopes gently into the water, a transfer from a wheelchair to a small boat on shore may be made relatively easily. Assistance may be required to launch the boat.

Transfer to a boat floating against a shore may be more difficult from a wheelchair. An overhanging railing is essential.

Facilities should be provided to assist people with mobility, balance and strength impairments to enter and leave boats.

- Shallow banks - Hard, non-slip surface materials that do not soften or erode from water.

- Steep banks - Provide curbing and boat cleats. A hand rail perpendicular to the shoreline is recommended. (New Mexico)

Fixed Dock Transfer

Transfer to any size boat from a fixed dock or pier. Vertical distance from dock to water may vary. Access to small boats may be difficult if dock height is more than 18 inches.

The height of a floating dock above the water will remain constant. A height of 18 inches is recommended for small boats. (New Mexico)

SAFETY

Safety equipment should be provided at docks and piers, including ladders, and rescue equipment such as life-rings and rescue poles.

Personal Floatation Devices (PFDs) are recommended for all boaters at all times for the majority of small boat fatalities occur in good weather, on calm water. Boaters with physical disabilities should water test their PFD under controlled conditions to make sure that it performs effectively. The weight of braces, or shift of center of gravity of an amputee may adversely effect the way a pfd holds a person in the water. (New Mexico)

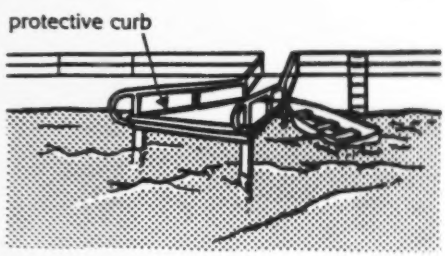
Fixed Docks and Piers

Fixed docks and piers are appropriate for locations with stable water levels.

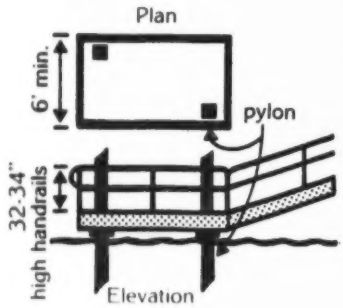
- Railings and curbs: Railings 32" to 40" high min. curbs 2" high.

- Materials: Non slip materials.
  Transfer aids.
  Vertical joints less than 1/4".
  Horizontal joints less than 1/2". (New Mexico)

Boat Dock



Floating Boat Dock



(Indiana)

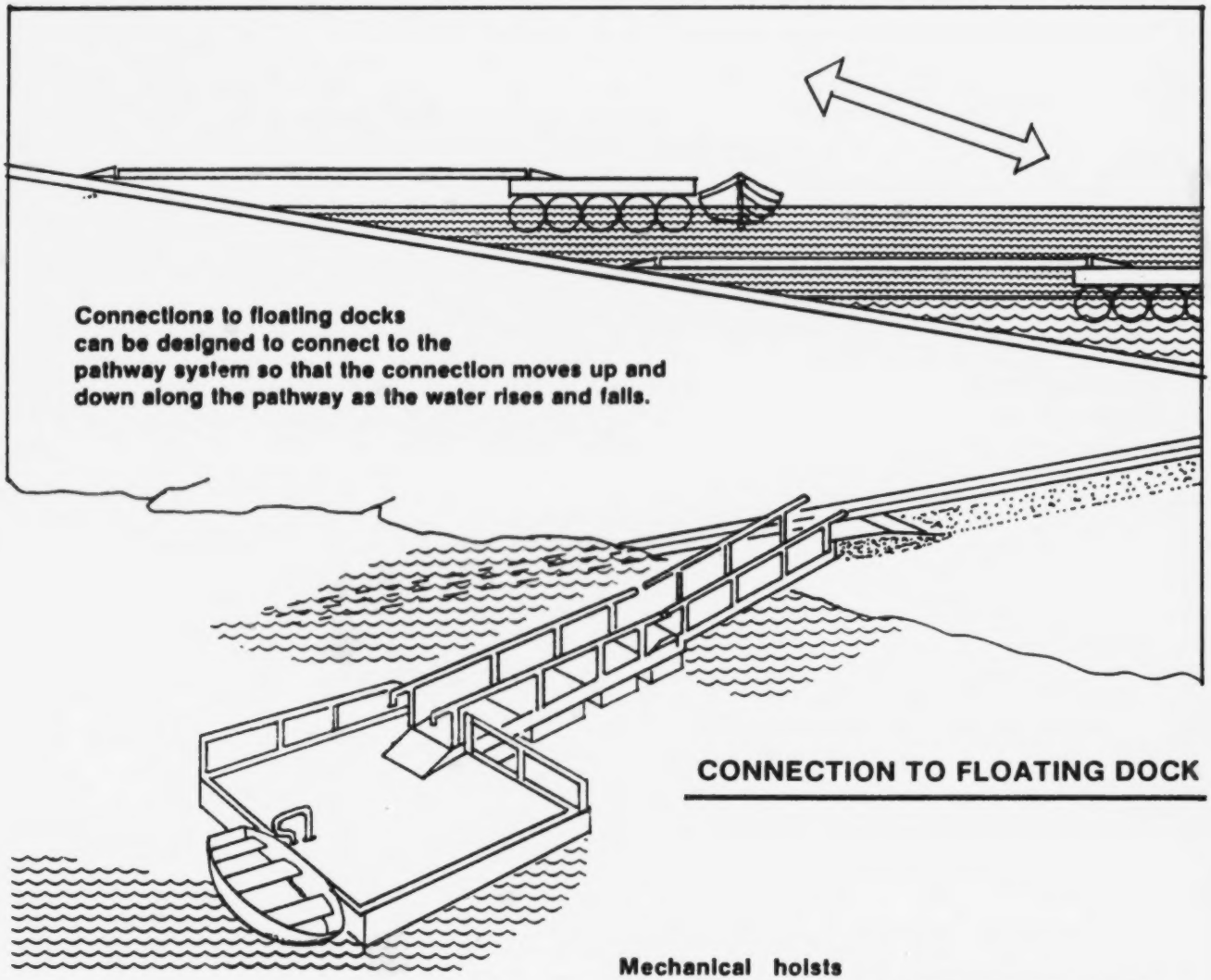
Floating Docks

Floating docks are appropriate for locations where the water level rises and falls. A major advantage is that a consistent relationship between the dock surface and the water level can be maintained. Disadvantages include instability and motion due to waves and the movement of people, and a variable connection to the pathway system on shore.

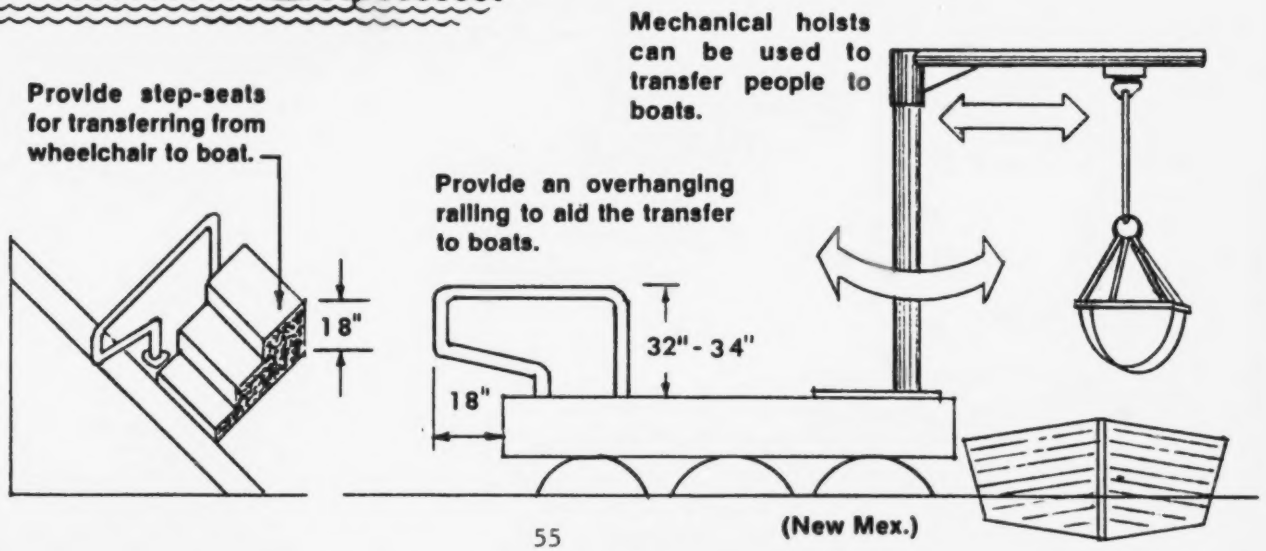
It is important that floating docks have sufficient floatation to support people and equipment without significant tipping.

- Railings and curbs: Railings at edges not used for boarding boats.

  Curbs and railings required on floating docks, recommended on piers and stable docks. (New Mexico)


Connections to floating docks
can be designed to connect to the
pathway system so that the connection moves up and
down along the pathway as the water rises and falls.

CONNECTION TO FLOATING DOCK



(New Mex.)

FISHING FACILITIES

INTEGRATION OF ACCESSIBLE FACILITIES

Anglers with disabilities should not be segregated from the rest of the fishing public. Careful planning and management can provide accessible facilities for people who need them, without isolation or stigma. Two approaches are appropriate. (New Mexico)

Shared:

A facility (such as a fishing pier) may be shared by disabled and non-disabled anglers. Parts of the facility may be specially designated for disabled people. If the use is heavy, those places may be reserved for exclusive use by disabled people. Otherwise, the facility can be used on a first come, first served basis. Or, signs may ask a non-disabled angler to yield a place to a person with a disability.

Adjacent:

Reserved accessible fishing stations may be interspersed with the existing pattern of fishing spots along a stream or lake shore, so that the desirable fishing locations are equitably divided.

Exclusive:

Facilities for the exclusive use of people with disabilities are not recommended. (New Mexico)

FISHING PIERS

Design fishing piers which provide shade, space for gear, and benches (optional). Allow enough space for free movement behind seated fisherman.

Fishing area should be accessible by firm-surfaced trail, flush with surface of pier.

Arm rest and bait shelf assists seated fishermen.

Provide a bait shelf, 8" to 12" wide, and an arm/pole rest inclined about 30 degrees.

Provide 4" kickplate along edge of pier for safety.

Spacing between planks on deck should be less than 1/2". (HCRS)

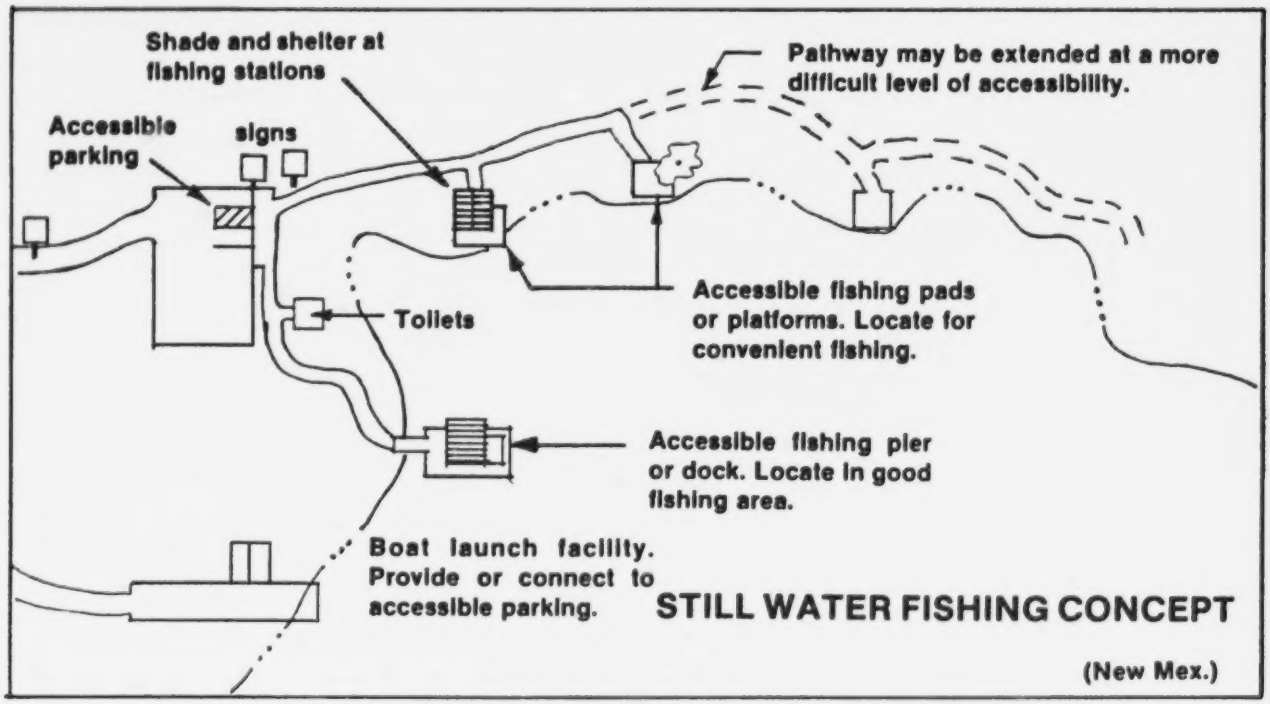
Designated Accessible Fishing Facilities may be interspersed with unimproved fishing locations. Actual placement should respond to topography, location with other facilities and quality of fishing. (New Mexico)

STILL WATER

Some of the important planning and design issues for still water sites are:

- providing access to good fishing locations,
- designing for changing water levels,
- safety.

Still water fishing stations will vary greatly, depending on the nature of the site, the climate, and the preferences of the fishing population. A highly visible fishing pier may be appropriate at a developed site, but a fishing pad which blends into the landscape would be preferred at a natural site. (New Mexico)


Shade and shelter at fishing stations
Pathway may be extended at a more difficult level of accessibility.
Accessible parking
signs
Toilets
Accessible fishing pads or platforms. Locate for convenient fishing.
Accessible fishing pier or dock. Locate in good fishing area.
Boat launch facility. Provide or connect to accessible parking.
STILL WATER FISHING CONCEPT
(New Mex.)

Safety

Different types of fishing stations will require different safety features. A dock over deep water will need railings, while a pad on a gently sloping shore will not. (New Mexico)

- Deep water: Curbs and railings.
  Ladders and life rings at docks and piers and at shore locations with deep water.

- Shallow water: Curbs at water edge.

Ladders and life rings or rescue poles should be provided at all locations that pose a safety risk.

Curbs should be a minimum of 2 in. high (4 in. is preferred if there is no railing) (New Mexico)

MOVING WATER

The major moving water issues include:

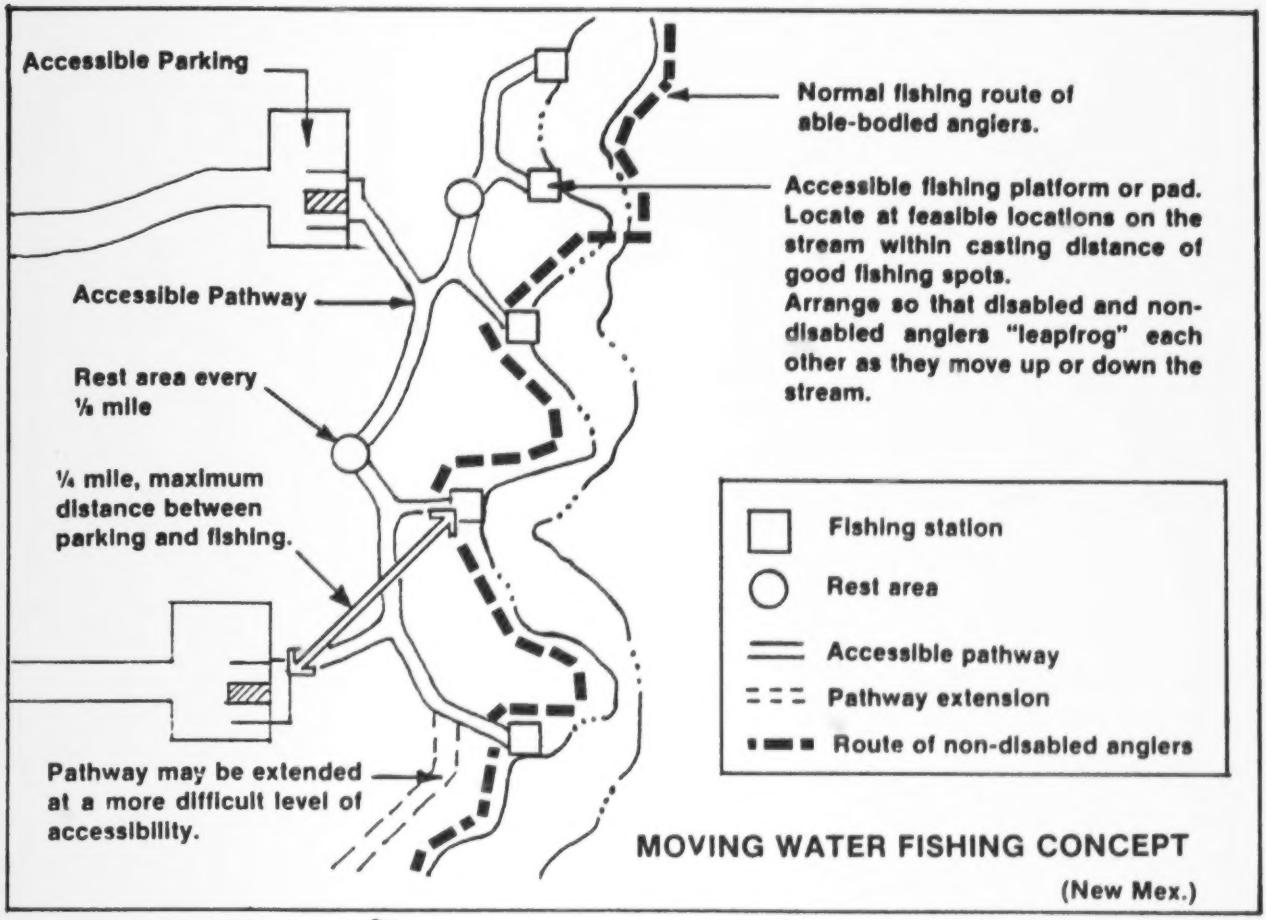
- identifying good fishing spots that are stable from year to year and can be developed as fishing stations;
- designing a pathway system at the designated Level of Accessiblity that is convenient, but doesn't interfere with the fishing;
- placing fishing stations so that anglers are concealed from the fish, but have a clear casting area. (New Mexico)

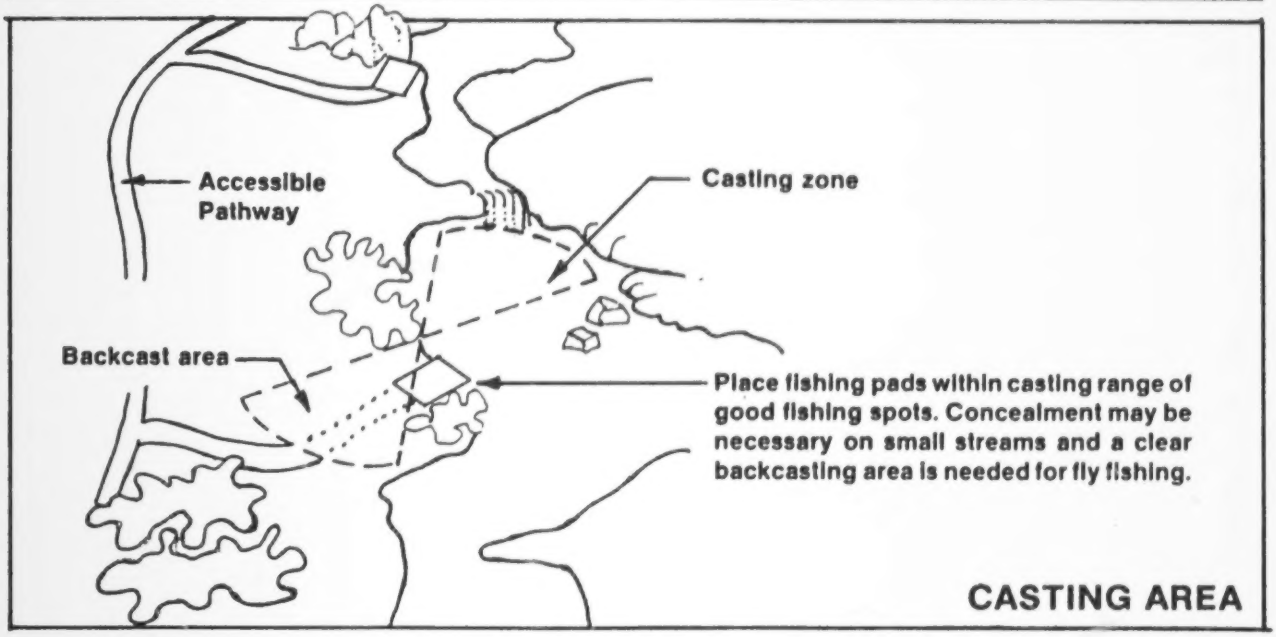
Safety

The safety concerns for still water also apply to moving water sites. However, many moving water sites, particularly on small streams, will not have the deep water requirement for railings, ladders, life rings, etc. (See Still Water safety requirements).

- Curbs at water edge.

- Railings at deep water locations. (New Mexico)


Accessible Parking
Normal fishing route of able-bodied anglers.
Accessible fishing platform or pad. Locate at feasible locations on the stream within casting distance of good fishing spots.
Arrange so that disabled and non-disabled anglers "leapfrog" each other as they move up or down the stream.
Accessible Pathway
Rest area every ⅛ mile
¼ mile, maximum distance between parking and fishing.
Fishing station
Rest area
Accessible pathway
Pathway extension
Route of non-disabled anglers
Pathway may be extended at a more difficult level of accessibility.
MOVING WATER FISHING CONCEPT
(New Mex.)


Accessible Pathway
Casting zone
Backcast area
Place fishing pads within casting range of good fishing spots. Concealment may be necessary on small streams and a clear backcasting area is needed for fly fishing.
CASTING AREA
(New Mex.)

Casting

Fishing stations on moving water must be spaced within casting distance of the fish. A reasonably clear backcasting area must be provided for fly casting, and concealment is often necessary on small streams so the fish are not spooked.

Fishing pads on small streams should be designed for one angler with enough space for a companion.

Shade and shelter should be available, but they do not have to be placed at the fishing station itself if the angler is moving from place to place. (New Mexico)

Arrange so that disabled and non-disabled anglers "leapfrog" each other as they move up or down the stream. (New Mexico)

FISHING STATIONS

The number of fishing stations that will be needed at a site is difficult to estimate. A successful facility will certainly increase use. The recommendations below are minimums. Facilities should be designed with flexibility to accomodate more people, if possible.

- 1 accessible fishing station for each accessible parking space.

Frontage: Allow a minimum of 4 lineal feet per angler at docks and heavily used facilities. 5 ft. minimum should be allowed at shore pads.

Width or Depth: 6 ft. - 8 ft. to allow pedestrian movement behind anglers.

Seating: 1 seat for each 2 fishing stations. Seats can double as tackle shelf.

Shade and Shelter: Exposure to hot sun and harsh weather can be a serious health risk to people with certain kinds of disabilities. Shade from the sun and shelter are particularly important at still water fishing sites where people will be stationary for long periods of time.

Fishing stations should be located to take advantage of natural shade and shelter. (New Mexico)

Railings

Railings at fishing locations must protect people from accidents but not hinder fishing activities. A typical 42 inch high guardrail is convenient for a standing angler but not for a seated person or a child.

Railings should be designed to provide reasonable security and convenient fishing for both standing and seated anglers. Two heights are recommended, 42 inches (min.) for standing fishing and 32 inches (min.) for seated fishing. (New Mexico)

Provide fishing rod holder at each fishing station. Drill - 1 1/4" (min.) hole in wood railings or attach 1 1/4" (min.) inside diameter pipe.

Slope railing surface at a comfortable angle, 15 to 30 degrees. (New Mexico)

Tansitions to Pathways

Transitions between pathways and fishing docks and piers must meet all of the requirements for pathways or ramps. (New Mexico)

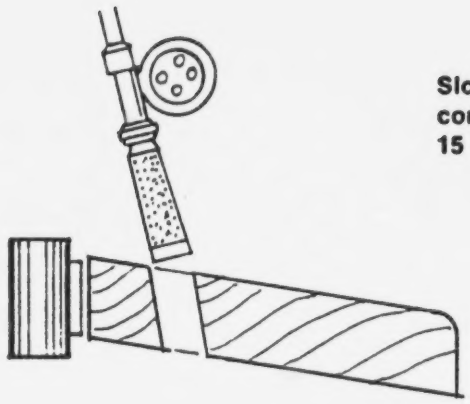
Surface Materials

Hard, non-slip surface materials. Vertical joints and texture less than 1/4 in. Horizontal joints less than 1/2 inch. (New Mexico)

Provide fishing rod holder at each fishing station. Drill 1 25" (min.) hole in wood railings or attach 1 25" (min.) inside diameter pipe.

Slope railing surface at a comfortable angle, 15 to 30 degrees. (New Mexico)

Provide fishing rod holder at each fishing station.
Drill 1.25" (min.) hole in wood railings or attach 1.25" (min.) inside diameter pipe.



Slope railing surface at a comfortable angle, 15 to 30 degrees.

RAILING DETAIL

Provide low railing for children and people in wheelchairs or other seats. Alternate with full height rail. Frontage 4 ft. per person minimum.

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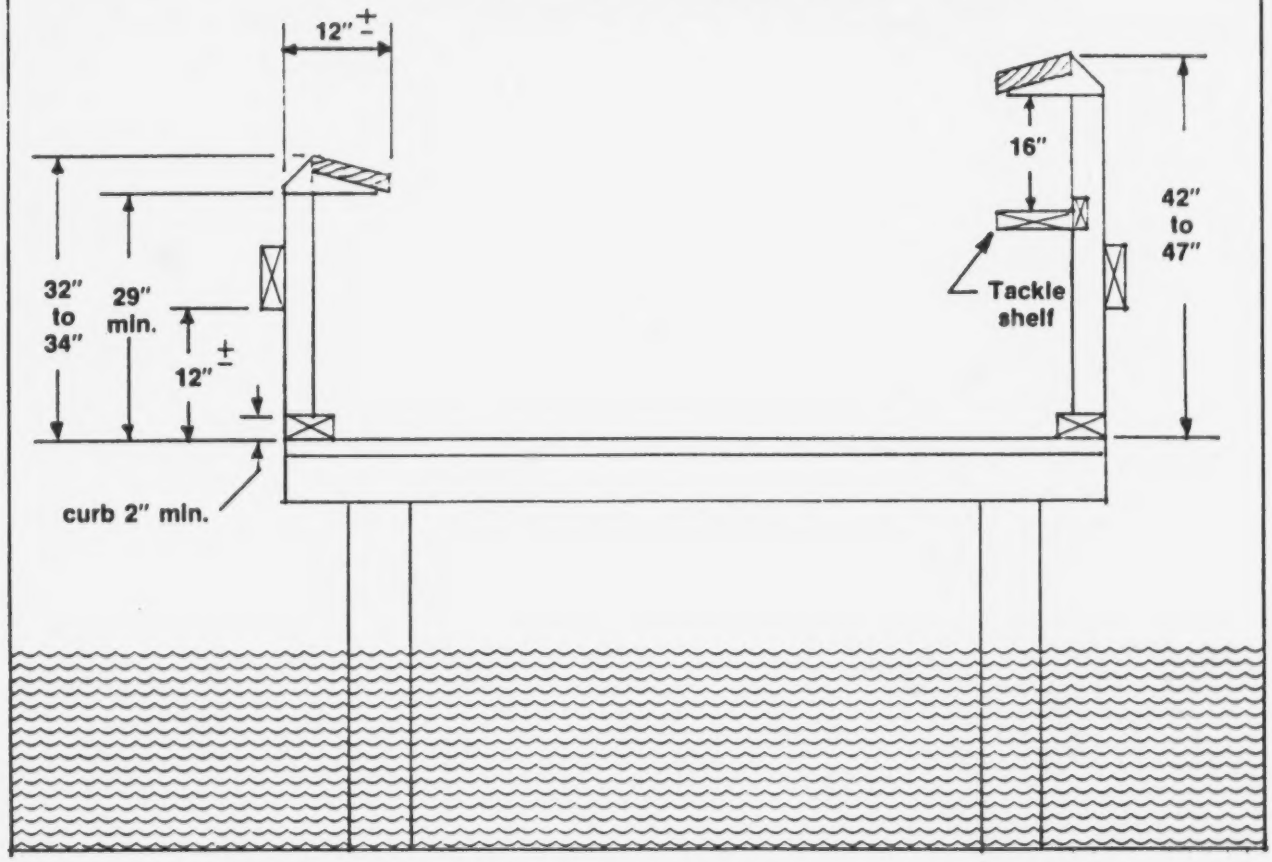


(New Mex.)

PICNICKING

TABLES AND BENCHES

Accessible tables should be located on level sites adjacent to a firm, stable-surfaced path.

Extend the ends of the table 18" to 25" from table legs to provide an unobstructed space for chairs.

Allow clearance bewteen ground and underside of table top so the wheelchair armrests can slide underneath. Average armrest height is 30".

Provide a clear lateral space, at least 30" wide, beneath the table to accomodoate average width of a wheelchair.

Include a space beside bench for wheelchair or stroller (about 30" wide for average wheelchair).

Seating areas should be located adjacent to (but not obstructing) pathways and developed trails, particularly along inclines.

Texture change in walkways adjacent to seating areas will cue the blind to location of benches.

Benches that contrast in color from surroundings are more easily distinguished by visually impaired people.

Back and arm rests provide comfort and assistance for people who have difficulty standing or sitting. (HCRS)

GRILLS

Height of cooking surface should accommodate both seated and standing people.

Some grills and fireplaces should be accessible by a firm level path.

Grill handles should be easy to grip and should not conduct heat.

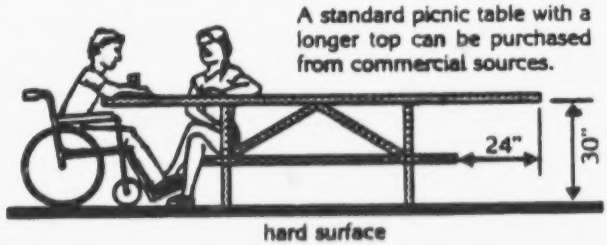
Front of grill should be flush with front of fireplace. (HCRS)

WATER FOUNTAINS

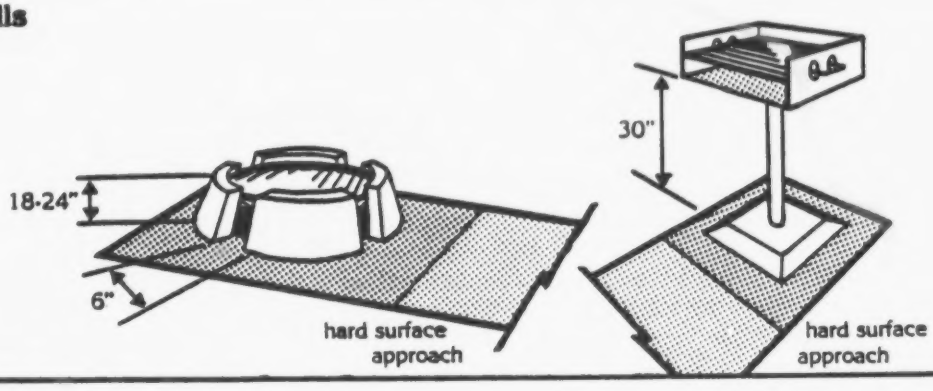
Hand levers are easier to operate than buttons or knobs.

Fountains and faucets should be accessible by firm level paths and should not protrude into pathways.

Picnic Areas



Grills



(Indiana)

In order to accommodate reach of average wheelchair user, faucets should be 3'-0" to 3'-4" high.

Openings in drain should not exceed 1/2".

Dual fountains accommodate children and people in wheelchairs as well as standing adults.

Keep in mind that many people with disabilities require water frequently. (HCRS)

Spout Height. Spouts shall be no higher than 36 in. (915 mm), measured from the floor or ground surfaces to the spout outlet. (Fed. Reg.)

Spout Location. The spouts of drinking fountains and water coolers shall be at the front of the unit and shall direct the water flow in a trajectory that is parallel or nearly parallel to the front of the unit. The spout shall provide a flow of water at least 4 in. (100 mm) high so as to allow the insertion of a cup or glass under the flow of water. (Fed. Reg.)

Controls. Controls shall comply with the guidelines for controls and operating mechanisms. Unit controls shall be front mounted or side mounted near the front edge. (Fed. Reg.)

Clearances. Wall- and post-mounted cantilevered units shall have a clear knee space between the bottom of the apron and the floor or ground at least 27 in. (685 mm) high, 30 in. (760 mm) wide, and 17 in. to 19 in. (430 mm to 485 mm) deep.

Such units shall also have a minimum clear floor space 30 in. by 48 in. (760 mm by 1220 mm) that allows a person in a wheelchair to approach the unit facing forward.

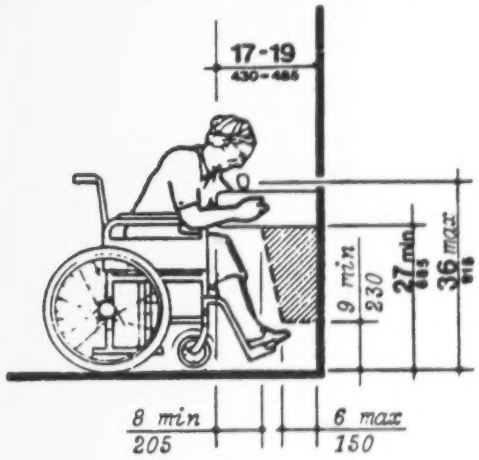
Free-standing or built-in units not having a clear space under them shall have a clear floor space at least 30 in by 48 in (760 mm by 1220 mm) that allows a person in a wheelchair to make a parallel approach to the unit. (Fed. Reg.)

PICNIC SHELTERS

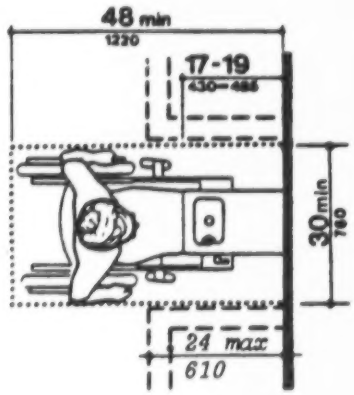
Picnic shelters should be accessible by a firm, level path, at least 5' wide, which is flush with the floor.

Tables should have extended ends for wheelchair seating.

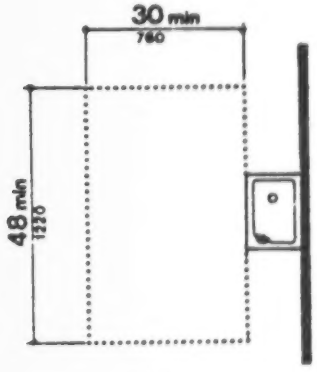
Locate water fountains or faucets and trash receptacles nearby on hard-surfaced areas where they will not protrude into pathways. (HCRS)



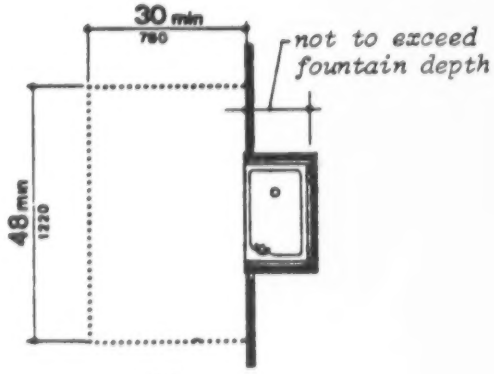
(a)
Spout Height and
Knee Clearance
equipment permitted in shaded area



(b)
Clear Floor Space



(c)
Free-Standing
Fountain or Cooler



(d)
Built-In
Fountain or Cooler

Fig. 27
Drinking Fountains and Water Coolers

(Fed. Reg.)

73

TRASH RECEPTACLES

Use trash receptacles which have round corners and are free from sharp edges.

Provide receptacles which can be used with a single arm motion.

Locate cans adjacent to, but not obstructing trails and pathways to avoid hazards for visually impaired.

In areas where scavenging animals pose problems, use a cover mechanism that will allow trash to be thrown away with a single arm motion. (hCRS)

TRAILS APPROACHING PICNIC AREAS

See guidelines used in walkways, paths, and trails.

CAMPING

The recent growth in recreational camping underscores the need to provide a diversity of camping experiences. While some people prefer the modern conveniences offered by developed campgrounds, others will choose primitive or wilderness camping experiences. Individual prefernce and ability may have little to do with apparent handicaps. While people who can walk often prefer comfortable, developed campgrounds, many people who cannot choose rugged wilderness areas. At present, most campsites only offer a uniform level of accessiblity. Well-designed, diverse camping facilities encourage the safe use of all areas by anyone willing to take on a particular level of challenge. (HCRS)

DEVELOPED CAMPING

Allow campers to choose from a variety of campsite surfaces such as pavement, soil, cement, compacted gravel, or grass. A few sites, with a hard, stable surface, should be designated barrier-free.

- Provide firm, wide (4 ft. min.) paths from accessible sites to communal facilities (restrooms, water, etc.).

- In campgrounds where people choose their own sites, mark accessible sites with the international symbol of access. Where staff assign campsites, accessible sites can be unmarked and reserved upon request. (HCRS)

- Campsites shall have fairly level terrain. There should be a choice of sunny or shady sites.

- Campsite pads shall be hard-surfaced in the area of the table, camper/or car parking spot, electrical outlet, and grill (14 feet by 16 feet general dimensions).

- For tent areas, an unsurfaced area shall be provided adjacent to the hard-surfaced vehicle pad.

- Accessible tables and grills as described in the Picnicking Section shall be provided.

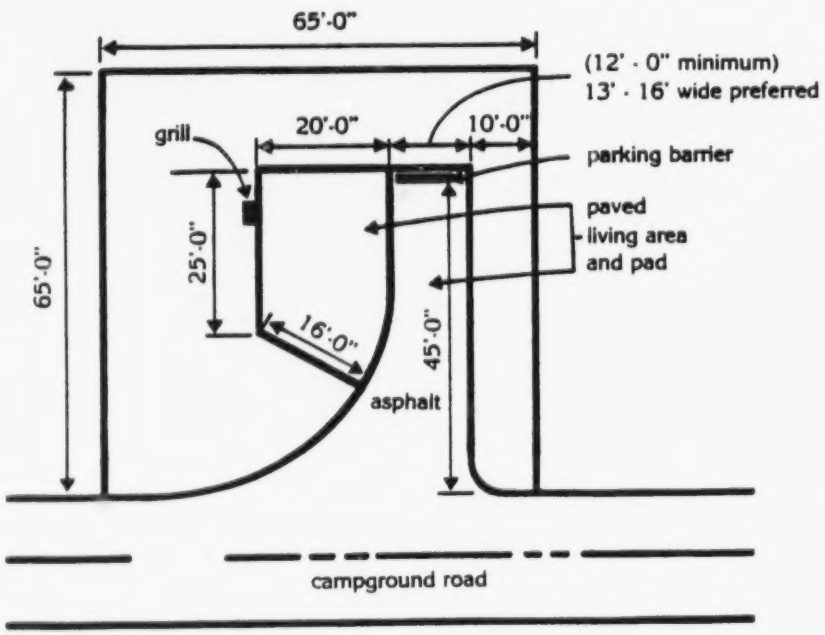
- Dangerous obstructions shall be removed and tree branches pruned to a height of 7 1/2 feet.

- Lever controls are recommended for water faucets.

- Push type openings on trash receptacles are recommended. When lids are used, they must be operable with a single effort. (Indiana)

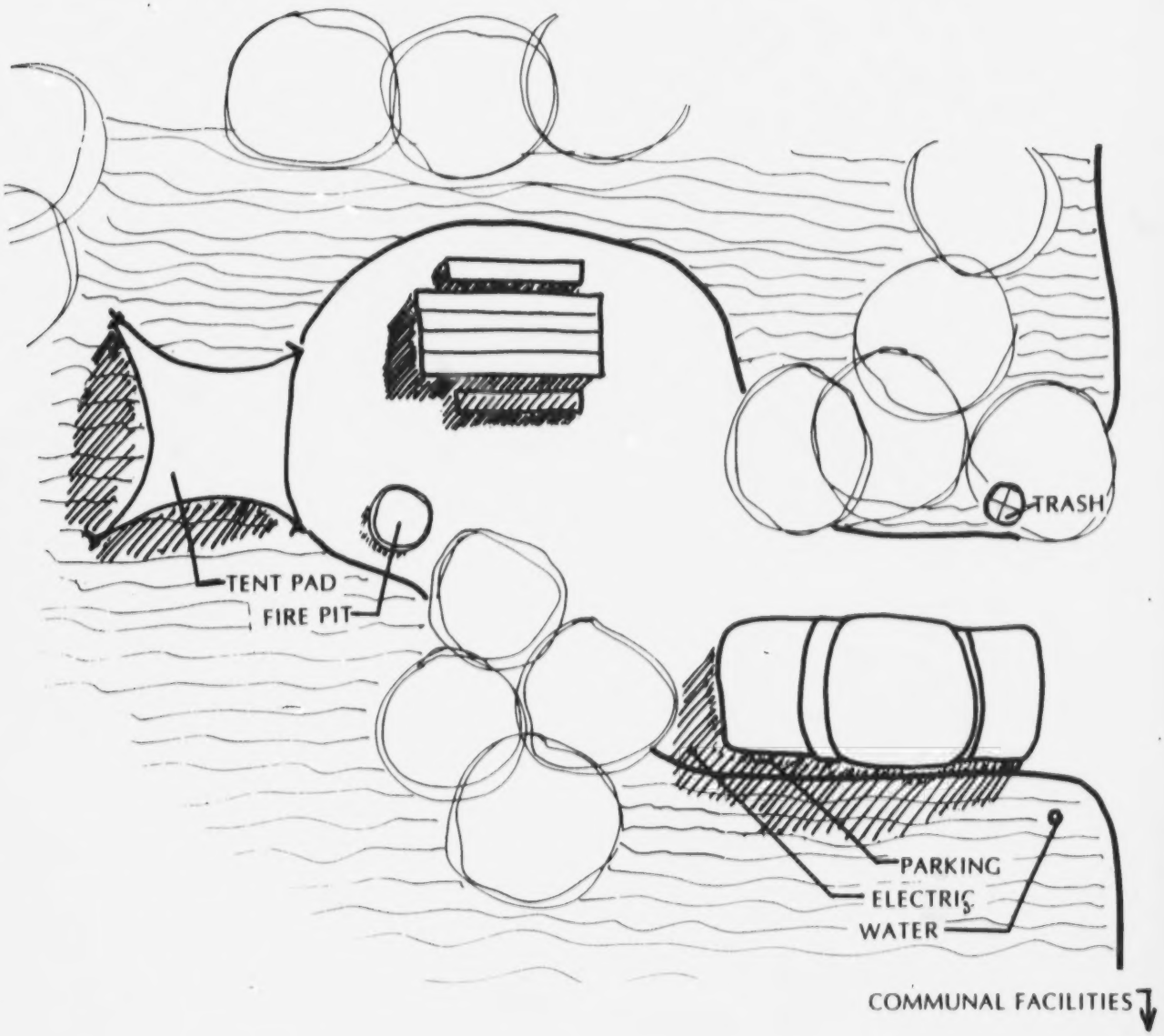
  Include firm, wide (3 ft. min.) path around tent pad.

Typical Handicapped Campsite



(Indiana)

DEVELOPED CAMPING



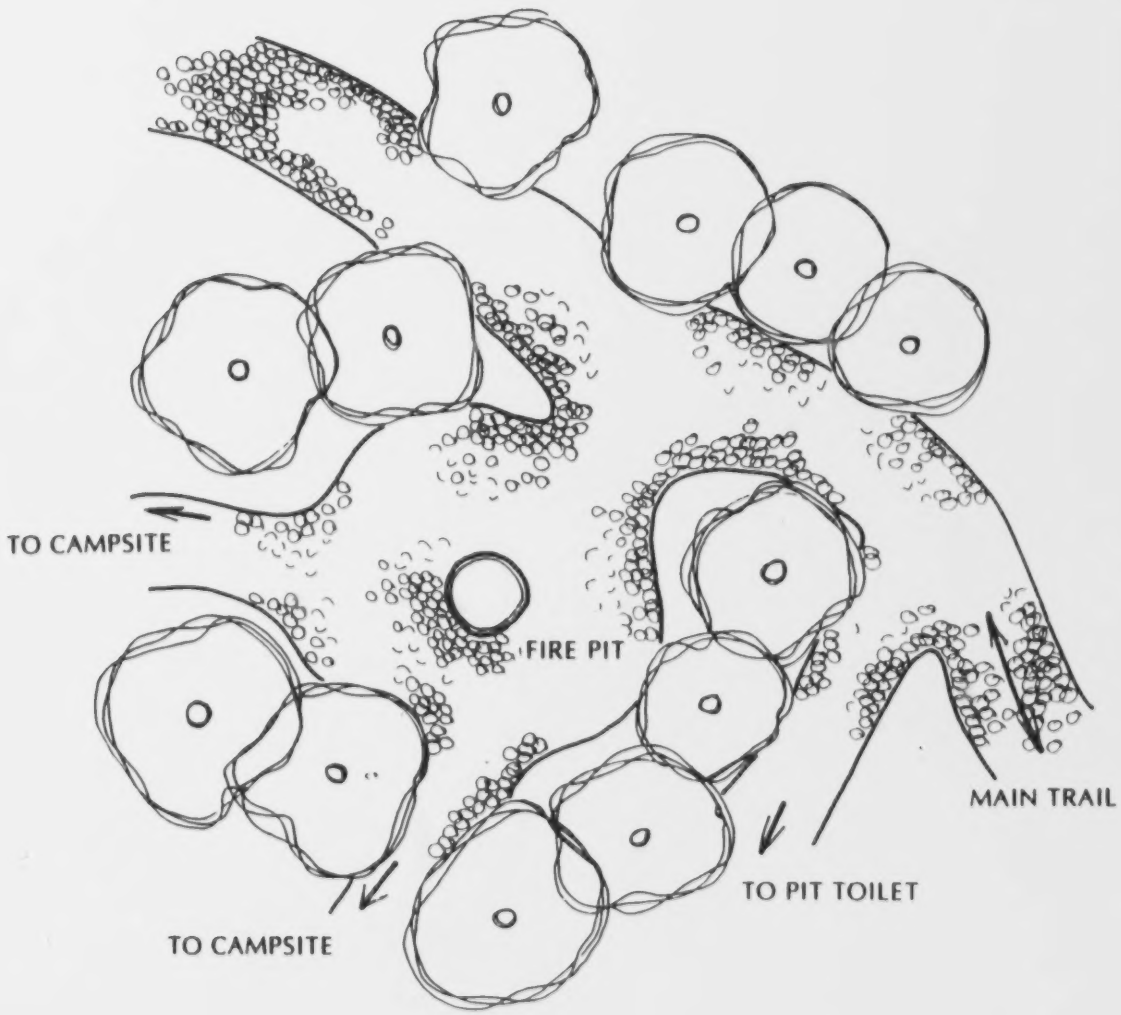
(HCRS)

PRIMITIVE CAMPING

Facilities in primitive camping areas generally include only water and pit toilets. However, a few modifications will open up this satisfying level of "roughing it" to anyone interested. In this manner, the difficulty of an experience derives from natural, not human made barriers. Modifications include:

- Tables with extended end for wheelchair seating.
- Fire rings which can be used from a seated position.
- Vault toilets with grab bars and a stall wide enough to permit side transfer.
- Wide paths (at least 3') with a firm, stable surface such as soil cement. (HCRS)

PRIMITIVE CAMPING



(HCRS)

WILDERNESS CAMPING

Managed for a low level of human use, wilderness or backcountry camping areas usually lack smooth paths, picnic facilities and toilets. Wilderness camping presents a stimulating opportunity with few creature comforts and a healthy amount of risk. Although these areas are commonly considered closed to be disabled, physical handicaps do not limit people to the extent that able-bodied people often assume. Representing one end of a spectrum of camping experiences. This activity can be chosen by any of us interested in putting our abilities to the test. Therefore, if left undeveloped, these camping areas require no special modifications. (HCRS)

NATURAL/HISTORIC FEATURES

APPROACH TRAILS

See guidelines in Walkways, Paths and Trails Section.

APPROACH ACCESS

Make the entire building exterior and surrounding area as accessible as possible without disturbing the historic character of the site. Keep in mind that landscaping may be an important aspect of the site's historic significance.

- Provide properly designed and designated parking in reasonable proximity, but not so close as to have a negative visual impact on the building.

- Provide firm walkways of proper slope and width from the parking lot to the side.

- Develop an historical interpretive program which can be presented at a completely accessible location on the site. (HCRS)

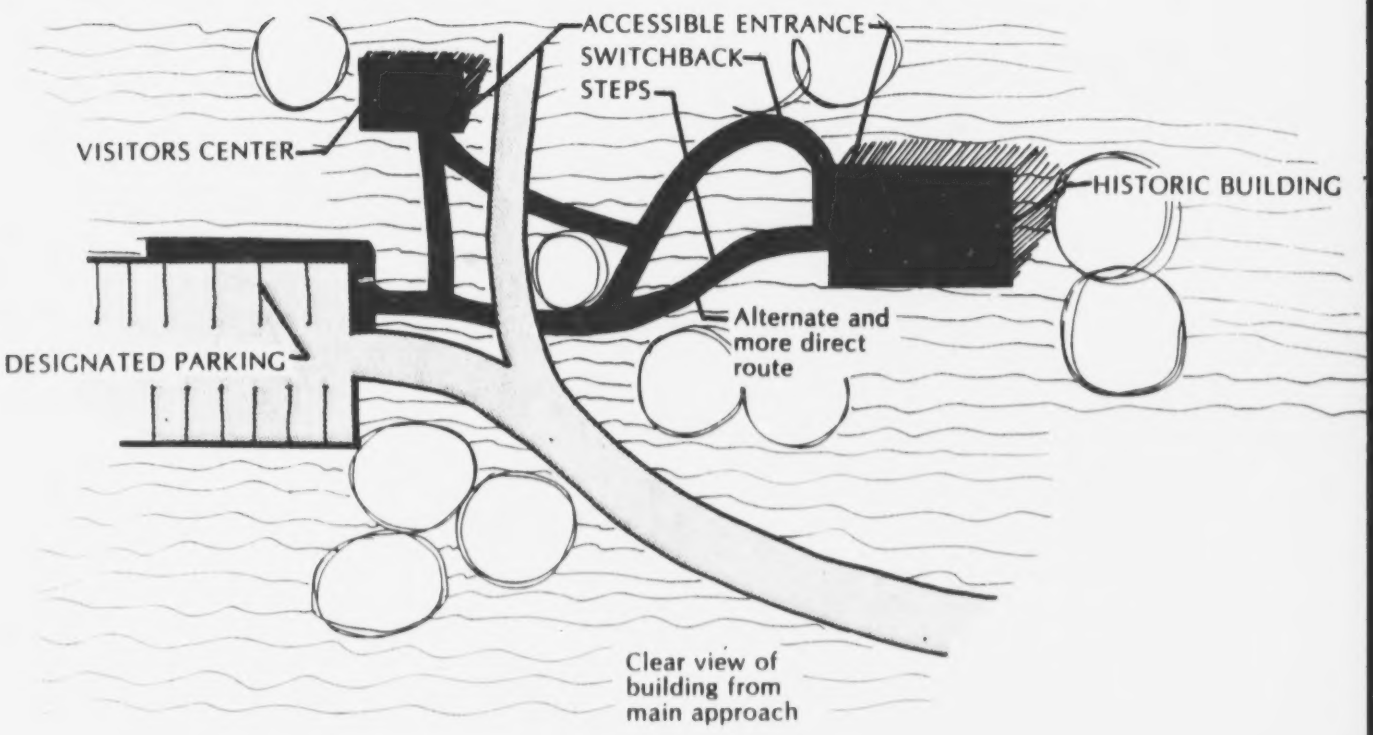
ENTRANCES

- Whenever possible, provide access through careful grading rather than structural additions which may affect the historic character of the site.

- Where needed, design and locate ramps, steps, or railings which are in harmony with the building and its surroundings.

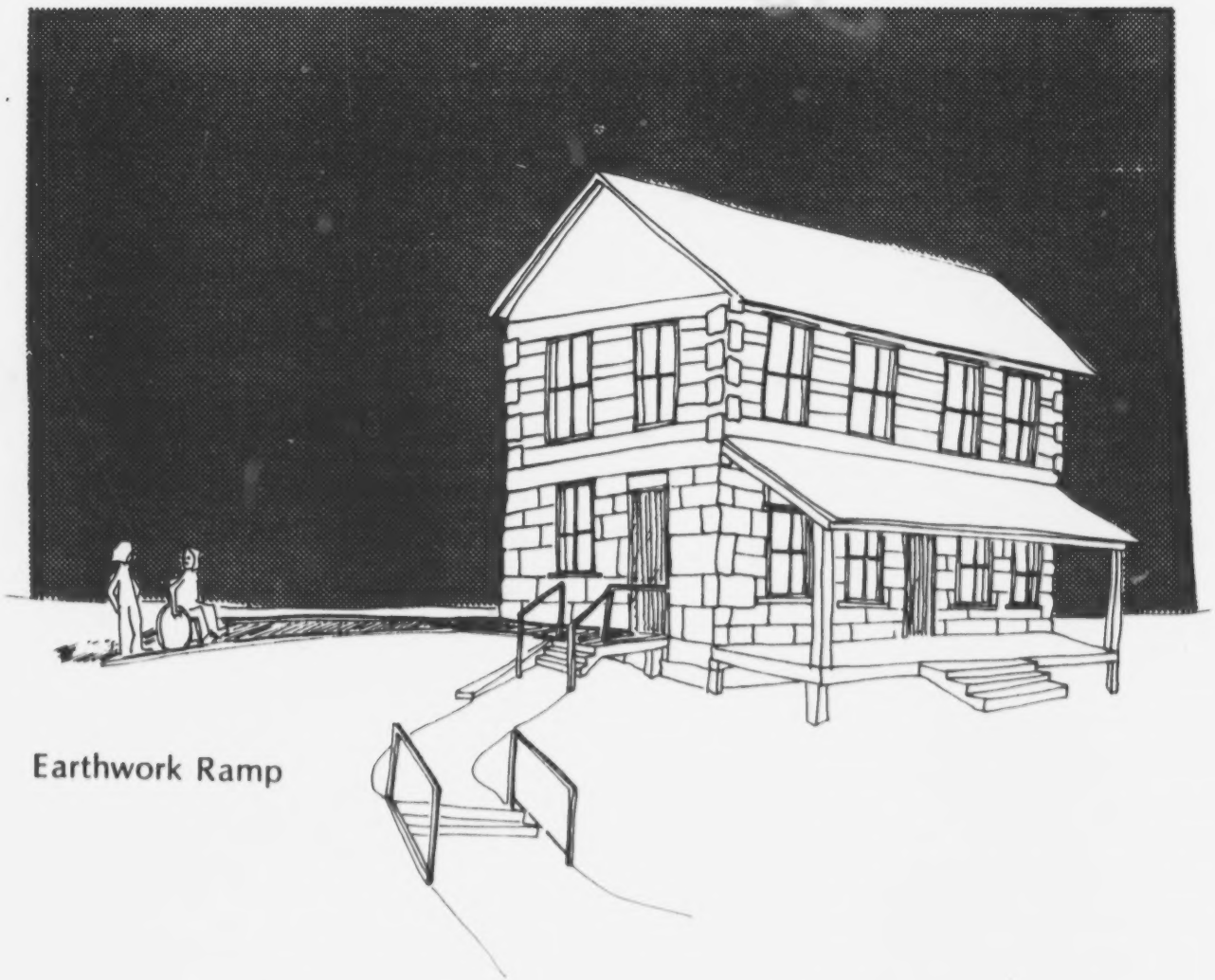
- Ramps and chairlifts which are removable provide access without permanently damaging historic materials

- Preserve the historic character of architecturally significant entrances by providing primary access for all visitors at an alternate entrance. (HCRS)



Typical Plan of Historic Site

(HCRS)



Earthwork Ramp

(HCRS)

INTERNAL ACCESS

Access within historic buildings may require either alterations to provide horizontal and vertical circulation or non-alteration solutions which avoid or minimize damage.

- Provide structural alterations (such as elevator, lifts, or ramps) in locations which do not negatively affect significant features or destroy historic materials.

- If possible, provide an alternate experience of inaccessible areas through the use of architectural models (which can also provide a tactile experience for the blind) and audio-visual presentations.

- Devices such as narrow wheelchairs or "wheelchair narrowers" can assist the disabled in gaining access to restricted locations. Properly instructed staff members can also facilitate access to otherwise inaccessble areas, although liability must be taken into account. (HCRS)

PLAYGROUNDS

By participating in challenging play activities, children develop muscles and coordination, self-esteem and the ability to work with others. Playgrounds can offer a spectrum of challenges in a safe and accessible environment if the following considerations are kept in mind:

- Level, firm paths and surfacing allow the equipment, courts, bathrooms, and drinking fountains to be used by people with decreased mobility.

- Carefully desinged equipment permits each child to develop abilities at an individual pace. By designing equipment that can be used by all children, the cost and stigma of special "handicapped playgrounds" can be avoided. (HCRS)

GENERAL RECOMMENDATIONS

General site consideration should accommodate both children and any supervising adults:

- Provide comfortable seating for children and adults in areas with plentiful shade (trees or shelters) and water.

- Provide paths at least 5' wide with some slope variations for riding and racing wagons, wheelchairs, bikes, and prone boards.

- Leave plenty of space between pieces of play equipment for maneuvering wheelchairs. (HCRS)

If you are new to the idea of choosing equipment usable by all youngsters, stop worrying about the disabilities and look at equipment with the following guidelines in mind:

1. Will it offer a sense of security to the child?

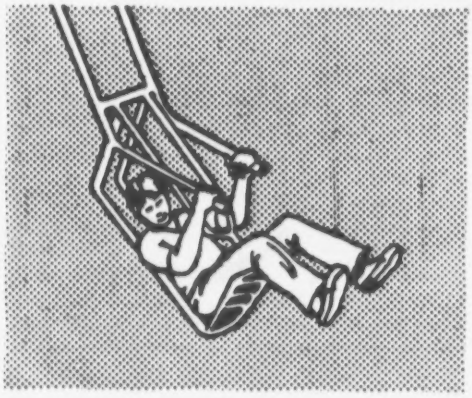
2. Is there a low level challenge and an opportunity for advanced challenges?

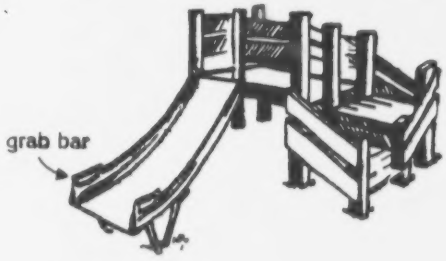
3. Can it be handled by a youngster with poor coordination?

4. Can it be used by a child with slow muscular action and reaction? (HCRS)

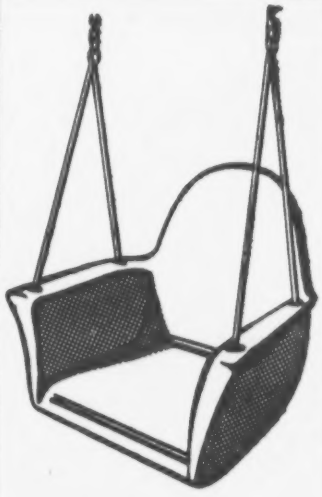
Spring Toys, Slides, & Swings

Spring toys keep the poorly coordinated child from falling off.

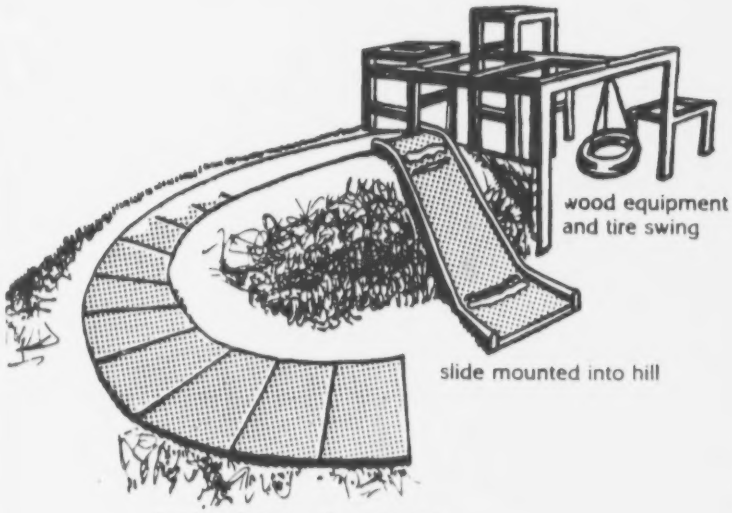




small slides with wide steps or ramps for easy access



swing sets with safety seats



hard surfaced walk up to slide

(Indiana)

SURFACES

Surfacing under and around equipment should provide adequate protection from injury under all weather conditions even after continuous service. Decisions on surfacing must weigh considerations such as cost, maintenance, and replacement over time against safety. Following are some of the characteristics to be considered in choosing playground surface material:

- Hard-surfaced material such as asphalt and concrete have high installation costs but low maintenance. Hard surfaces are the most durable, but offer the least protection against injury.

- Soft surfacing material (sand, pea gravel, wood mulch) can effectively cushion falls, but only with continuous maintenance. Soft surfacing material can also conceal glass and other sharp objects.

- Protective cushioning mats under playground equipment can only be used on level, uniform surfaces. They can provide recommended levels of protection only for equipment of limited heights. (HCRS)

SWINGING

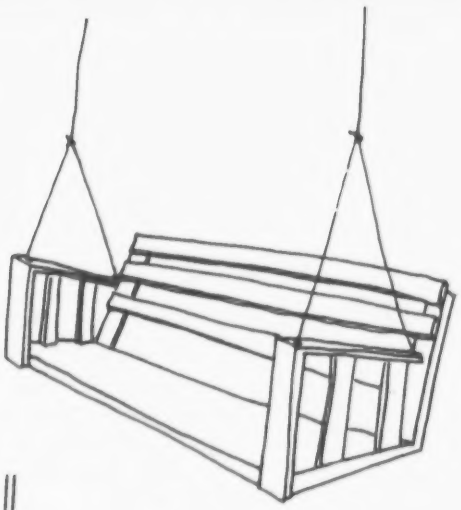
- Swingsets should offer a variety of experiences in order to meet varied abilities and needs.

- Provide both flexible swings (such as tire swings) and solid ones.

- Provide some rigid seats with firm backs for youngsters who need support.

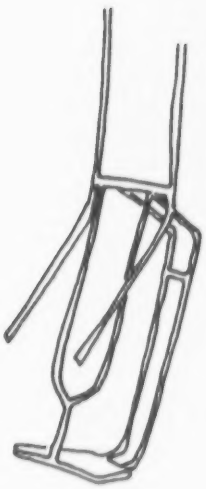
- Provide some swings that are operable by arms or legs only. (HCRS)

SWINGING



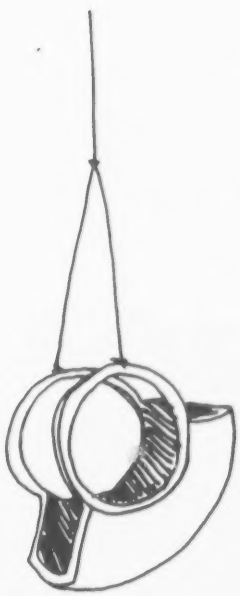
Porch-type Swing

Requires only leg movement to swing



Lever-Action or Momentum Swing

Requires only the arms to swing



Tire Swings

Safe and easy to use

(HCRS)

SLIDING AND CLIMBING

- Build slides into a hillside or adjacent to an easy-to-climb structure to eliminate the need for a ladder (with wide shallow steps a child can ease up on his behind).

- Minimize the amount of dropoff at the end of the slide.

- Climbing structures should provide various degrees of challenge, for example, different platform heights.

- Some structures can have climbing ropes or ramps with handholds that are easy to grasp.

- Offer opportunities for crawling into and through structures as well as climbing up them. (HCRS)

BALANCING

- Provide see-saws equipped with bumpers to lessen the landing impact.

- Some see-saws should have rigid seat backs for support.

- Spring platforms allow children to balance while standing, sitting, or lying flat. (HCRS)

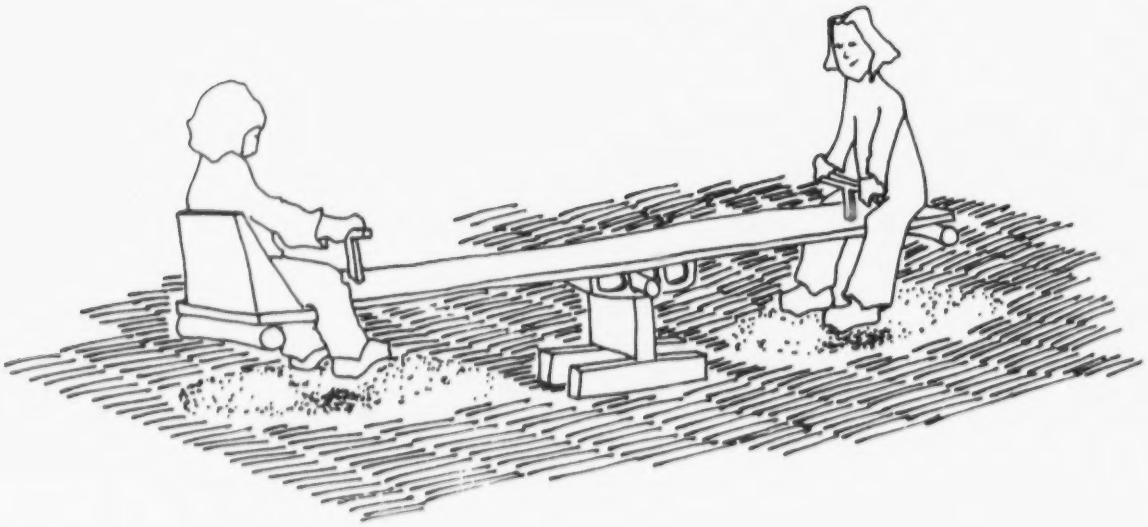
GAMES

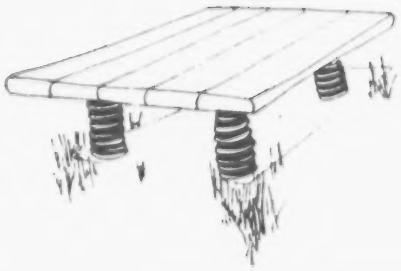
- Plan an area for throwing and catching or kicking games with nets around the perimeter for retrieving balls. The site should be accessible throughout by firm, level paths or ramps with a slope no greater than 1:12.

- Not everyone is able to shoot a basketball at a hoop 10' high, or push a shuffleboard disk the entire 52'. The design of these and other hard-surfaced courts should be sensitive to the abilities and need of all players.

- A standard full-size basketball court with adjustable hoops or a short court with hoops 6 or 7 feet high provide a choice.

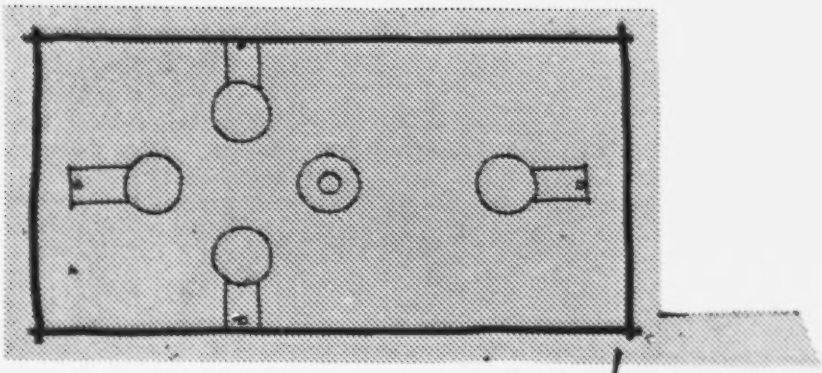
BALANCING





Spring Platforms

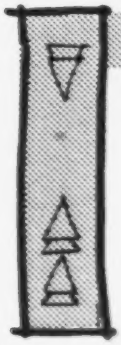
(HCRS)



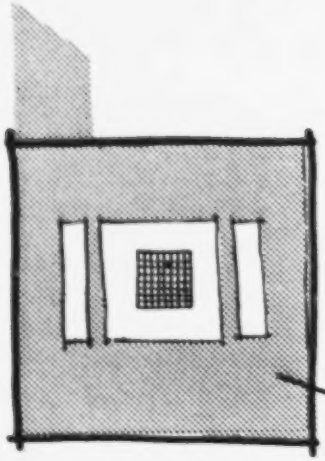
Basketball

Hoops should be 10′ high for standard game and 6′–7′ high for short game

Provide paved path, 5′ wide, from support facilities to hard-surfaced courts games

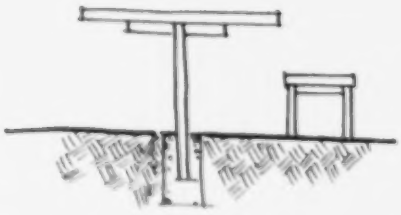


Shuffleboard



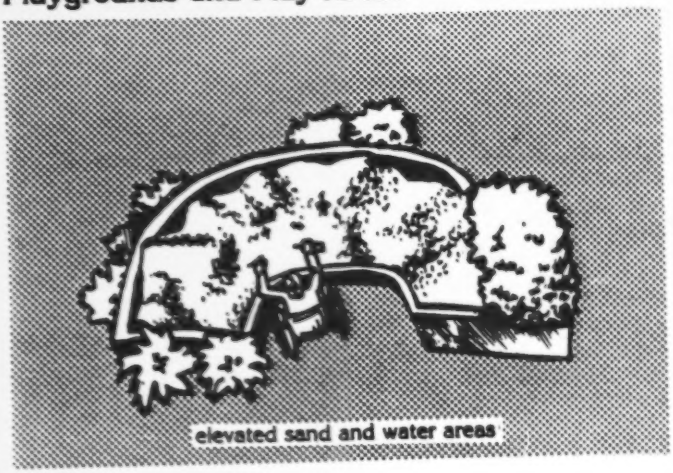
Gaming Table

Provide firm surface, 3′ wide, around game table

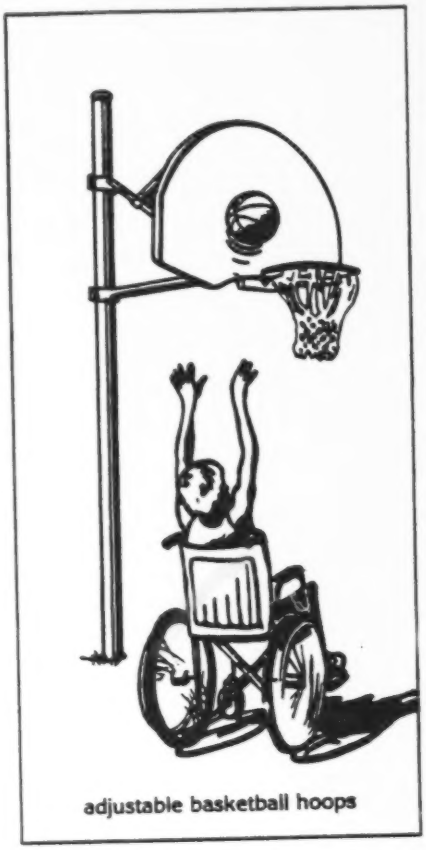


(HCRS)

Playgrounds and Play Areas

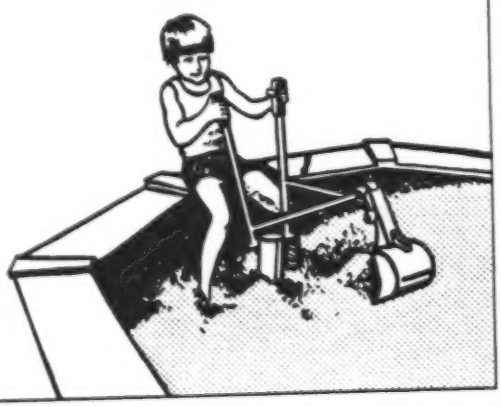


elevated sand and water areas



adjustable basketball hoops

sitting on shovel seat



(Indiana)

- A standard length shuffleboard game can be designed to include an additional shuffleboard target between the two end targets. This allows people to play either a long or short game depending on their preference.

- All courts should be approachable by, and bordered with, paved paths (HCRS).

WATER AND SAND

- Include sandboxes both at ground level and raised for those who cannot leave their wheelchairs.

- A raised sandbox built into a berm allows access in several ways. The raised end should provide 27" vertical clearance and 18" to 24" between the edge of the box and the base.

- Provide shallow wading and spray pools which have slip-resistant surfaces. Slope toward the center of the pool should be less than 1:12. (HCRS)

SPECIAL PROGRAMS

Approach trails and facilities for special programs should meet guidelines in other sections.

RENTAL CABINS AND LODGE ROOMS

See guidelines for Space Allowances and Reach Ranges; Clear Floor and Ground Space for Wheelchairs; Walkways, Paths, and Trails; Entrances and Exits to Buildings; and other applicable guidelines.

AMPHITHEATRES

Provide firm, wide paths leading to amphitheater and support facilities (restrooms, parking, concessions).

Surface of pathways should be slip-resistant under wet and dry conditions.

Whenever possible, grade site to provide access at several different seating levels without the use of steps or ramps. Otherwise, provide ramps (in addition to stairs). at least 4' wide, with a slope of 1:12 or less.

Provide wheelchair seating in as many different viewing areas as possible.

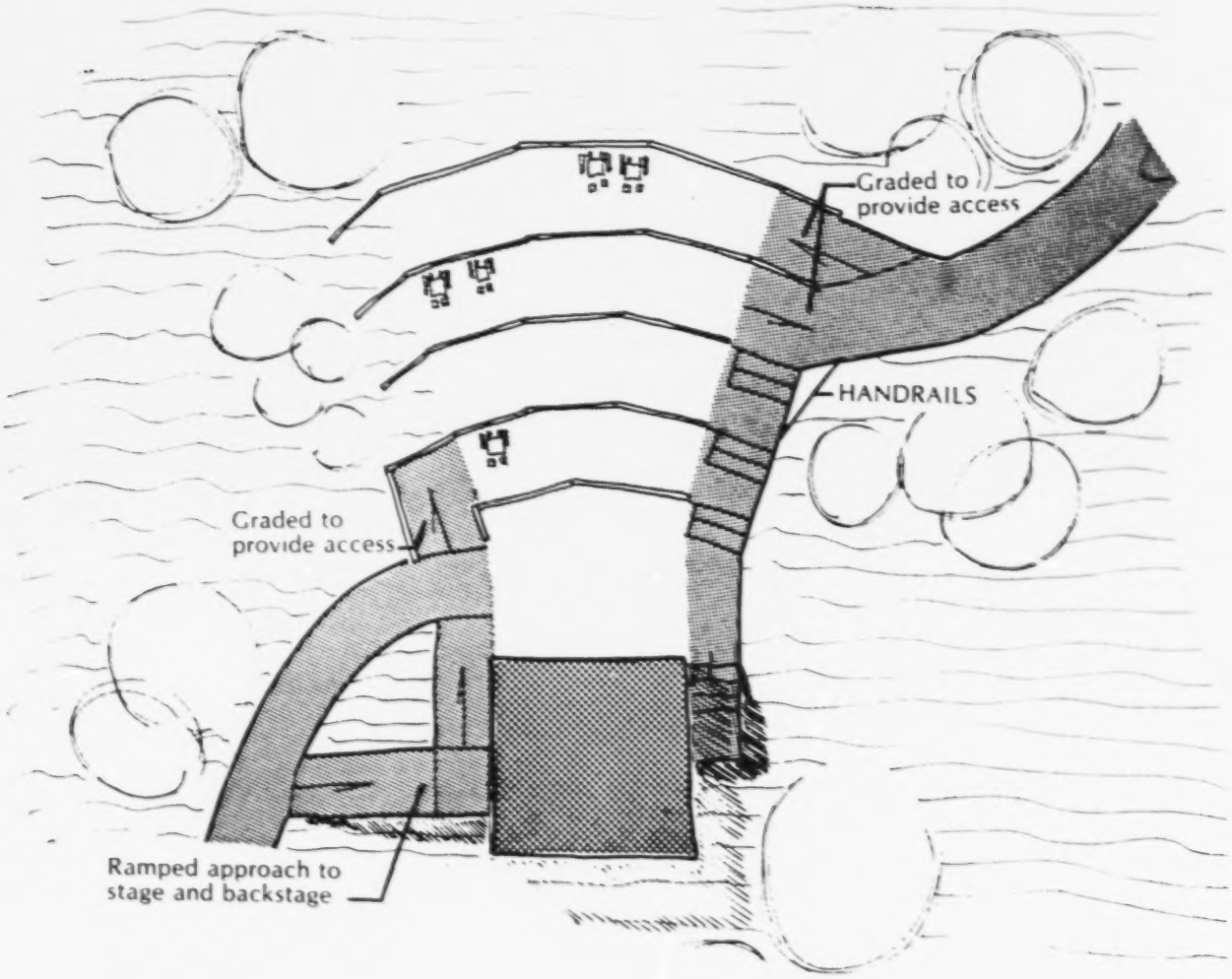
Cross aisle may be used to seat wheelchairs if it provides 4' of clear aisle space behind the chair. (HCRS)

TABLE 3
LOCATIONS FOR WHEELCHAIR USERS IN ASSEMBLY AREAS

Total Spaces in Assembly Area	Number of Locations to be Reserved for Wheelchair Users
0 to 500	2
501 to 750	3
751 to 1000	4
Over 1000	5 Plus 1 For Each 500 to 1000

For each fixed or built-in seating, tables, or work surfaces are provided in accessible spaces, at least one per room shall comply with ANSI. (SCBBFD)

Typical Amphitheater Plan



(HCRS)

TELEPHONES

Most existing telephone booths cannot be utilized by the individual with a disability. Consideration of the following criteria can rectify this situation.

First, telephones should be placed so that the dial, handset and the coin drop are within the reach of individuals in wheelchairs. A hand set equipped with an adjustible volume amphifier can aid those with hearing impairments. Phones with such equipment should be identified and include instruction for use.

Second, the pay phone number should be raised and located in an area where a blind individual can "read" it through the use of tactile sensation in his fingers. This would aid him in long distance calls as well as serving as a location indicator in case of emergency.

A third consideration would be the inclusion of a bench, either stationary or swing away for those people with weak lower extremities. (University of Wisconsin)

Clear Floor or Ground Space. A clear floor or ground space at least 30 in. by 48 in. (760 mm by 1220 mm) that allows either a forward or parallel approach by a person using a wheelchair shall be provided at telephones (see Fig. 44). Bases, enclosures, and fixed seats shall not impede approaches to telephones by people who use wheelchairs. (Fed. Reg.)

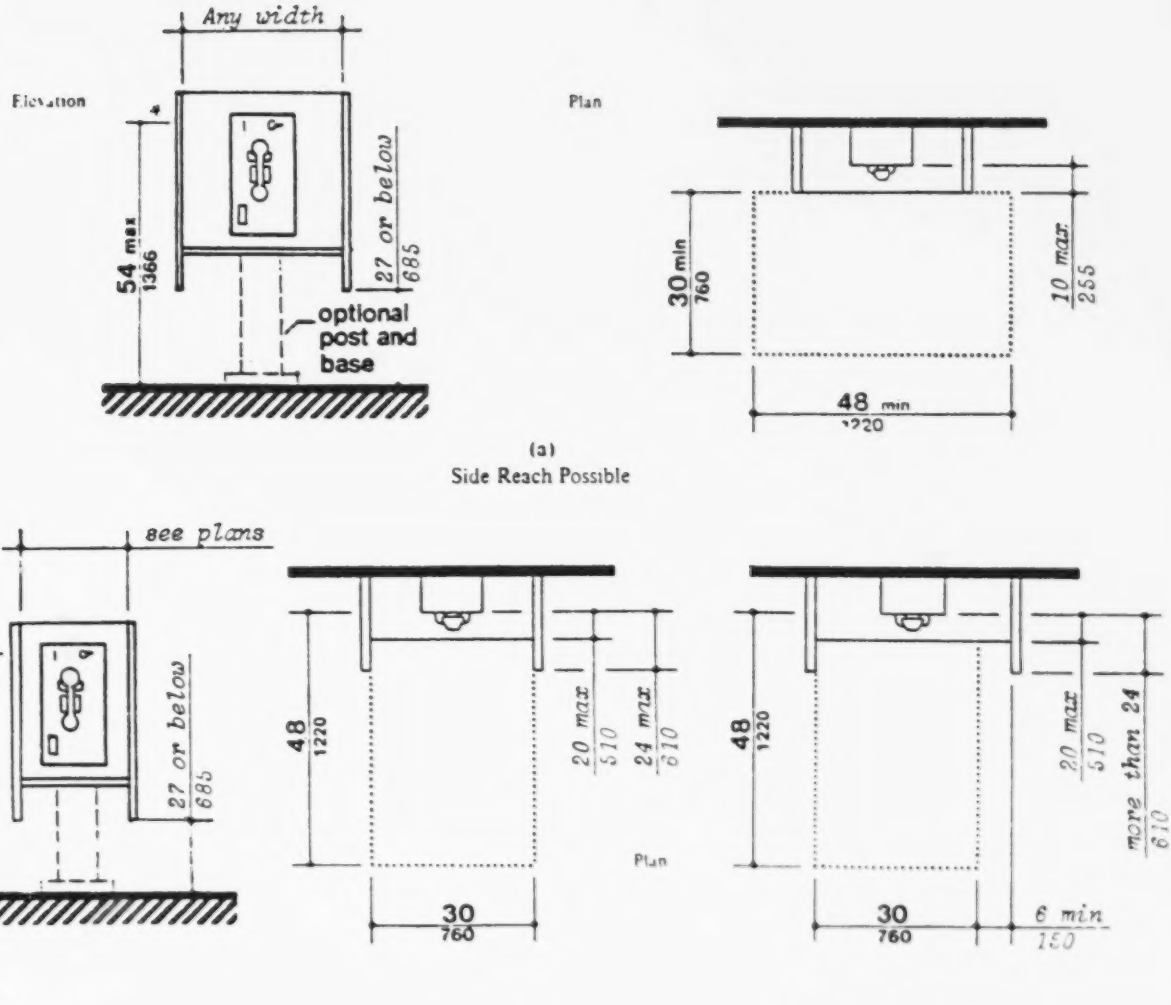
Mounting Height. The highest operable part of the telephone shall be within the reach ranges specified in the section on reach ranges. (Fed. Reg.)

Equipment for Hearing Impaired People. Telephones shall be equipped with a receiver that generates a magnetic field in the area of the receiver cap. Volume controls shall be provided. (Fed. Reg.)

Controls. Telephones shall have pushbutton controls where service for such equipment is available. (Fed. Reg.)

Telephone Books. Telephone books, if provided, shall be located in a position that compiles with the reach range specifications. (Fed. Reg.)

Cord Length. The cord from the telephone to the handset shall be at least 29 in. (735 mm) long. (Fed. Reg.)



(a)
Side Reach Possible

(c)
Forward Reach Required

* Height to highest operable parts which are essential to basic operation of telephone.

Fig. 44
Mounting Heights and Clearances for Telephones

(Fed. Reg.)

Water Closets

Clear Floor Space. Clear floor space for water closets not in stalls shall comply with Fig. 28. Clear floor space may be arranged to allow either a left-handed or right-handed approach. (Fed. Reg.)

Height. The height of water closets shall by 17 in. to 19 in. (430 mm to 485 mm), measureed to the top of the toilet seat (see Fig. 29). Seats shall not be sprung to return to a lifted position. (Fed. Reg.)

Grab Bars. Grab bars for water closets not located in stalls shall comply with Fig. 29 and with the section on Handrails, Grab Bars, etc. (Fed. Reg.)

Flush Controls. Flush controls shall be hand operated or automatic and shall comply with guidelines for controls and operating mechanisms. Controls for flush valves shall be mounted on the wide side of toilet areas no more than 44 in (1120 mm) above the floor. (Fed. Reg.)

Dispensers. Toilet paper dispensers shall be installed within reach, as shown in Fig. 29(b). Dispensers that control delivery or that do not permit continous paper flow, shall not be used. (Fed. Reg.)

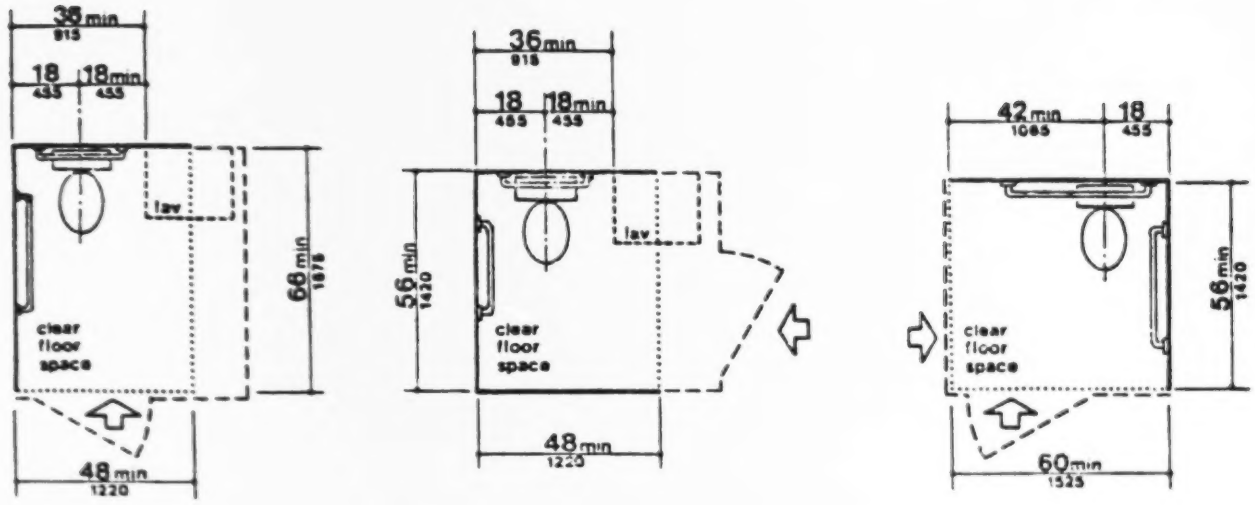
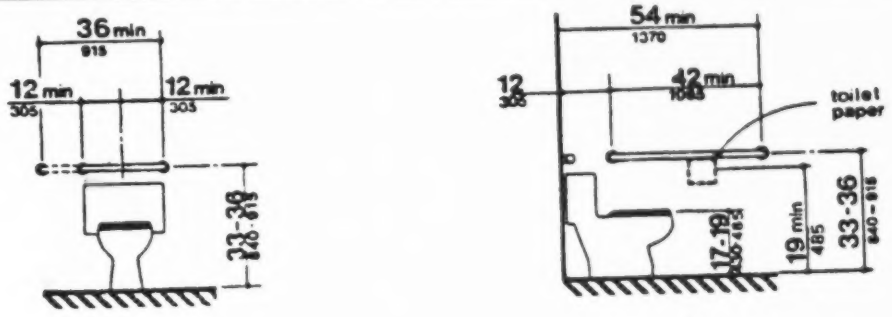


Fig. 28

Clear Floor Space at Water Closets

Possible wall locations – – – –

(Fed. Reg.)



(a)
Back Wall

(b)
Side Wall

Fig. 29

Grab Bars at Water Closets (Fed. Reg.)

Toilet Stalls

Location. Accessible toilet stalls shall be on an accessible route. (Fed. Reg.)

Water Closets. Water closets in accessible stalls shall comply with guidelines for water closets. (Fed. Reg.)

Size and Arrangement. The size and arrangement of toilet stalls shall comply with either Fig. 30(a) or (b). Toilet stalls with a minimum depth of 56 in. (1420 mm) (see Fig. 30(a)) or 66 in. (1675 mm) (see Fig. 30(b)) shall have wall-mounted water closets. If the depth of toliet stalls is increased at least 3 in. (75 mm), then a floor mounted water closet may be used. Arrangements shown for stalls may be reversed to all either a left- or a right-hand approach. However, in instances of alteration work where provision of a standard stall (Fig. 30 (a)) is structally impracticable or where plumbing code requirements prevent combining existing stalls to provide space, an alternate stall (Fig. 30 (b)) may be provided in lieu of the standard stall. (Fed. Reg.)

Toe Clearances. In standard stalls, the front partition and at least one side partition shall provide a toe clearance of at least 9 in. (230 mm) above the floor. If the depth of the stall is greater than 60 in. (1525 mm), then the toe clearance is not required. (Fed. Reg.)

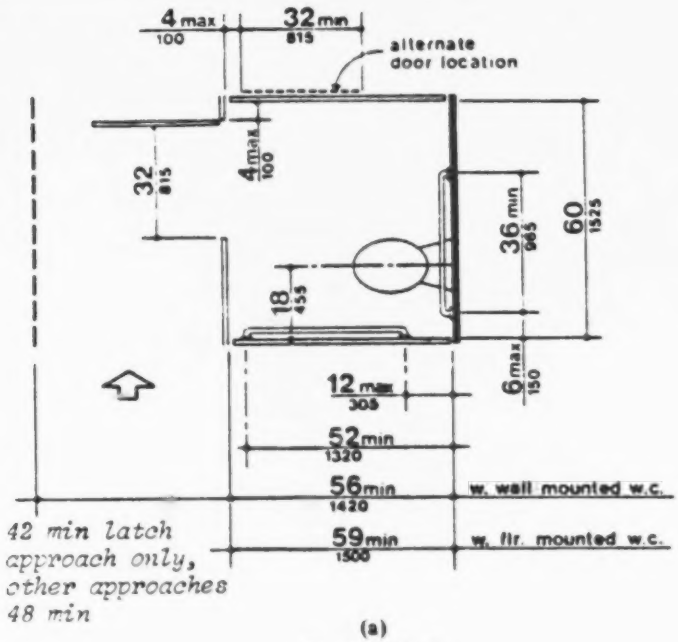
Doors. Toilet stall doors shall comply with the section on Entrances and Exists. If the toilet stall approach is from the latch side of the stall door, clearance between the door side of the stall and any obstruction may be reduced to a minimum of 42 in (1065 mm). (Fed. Reg.)

Grab Bars. Grab bars complying with the length and positioning shown in Fig. 30 (a), (b), (c), and (d) shall be provided. Grab bars may be mounted by any desired method as long as they have a gripping surface at the locations shown and do not obstruct the required clear floor area. Grab bars shall comply with the section or Handrails, Grab Bars, etc. (Fed. Reg.)

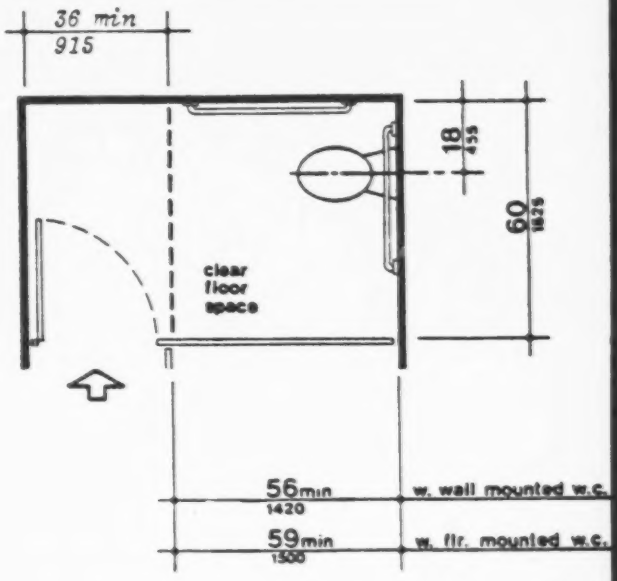
Urinals

Height. Urinals shall be stall-type or wall-hung with an elongated rim at a maximum of 17 in. (430 mm) above the floor. (Fed. Reg.)

Clear Floor Space. A clear floor space 30 in. by 48 in. (760 mm by 1220 mm) shall be provided in front of urinals to allow forward approach. This clear space shall adjoin or overlap an accessible route. Urinal shields that do not extend beyond the front edge of the urinal rim may be provided with 29 in. (735 mm) clearance between them. (Fed. Reg.)



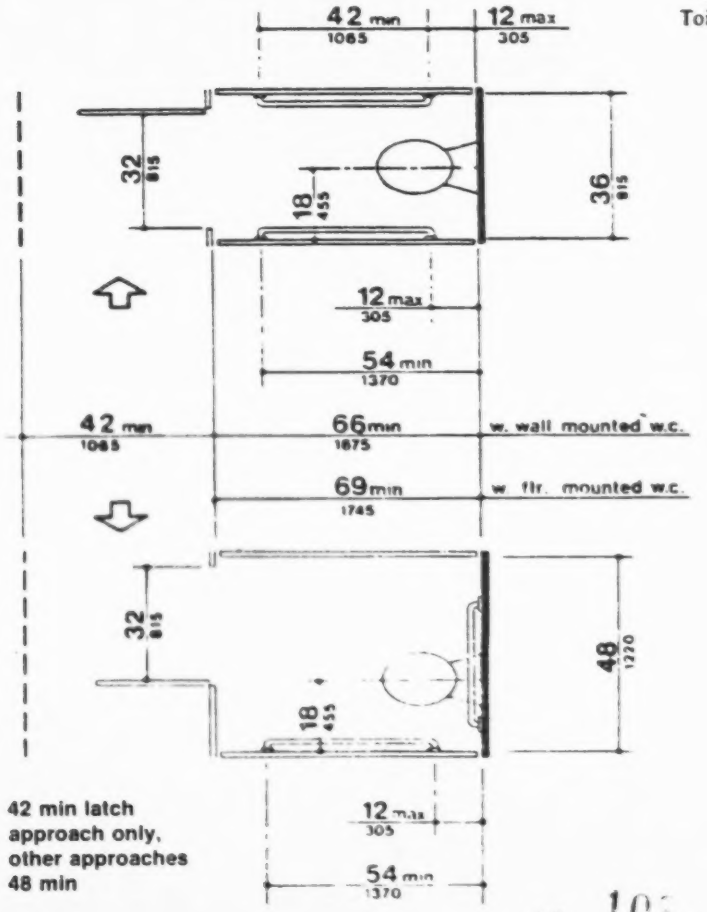
(a)
Standard Stall

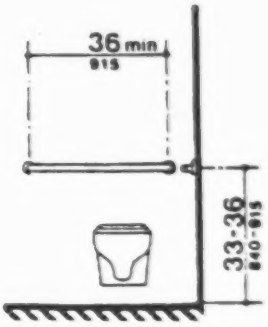


Standard Stall
(end of row)

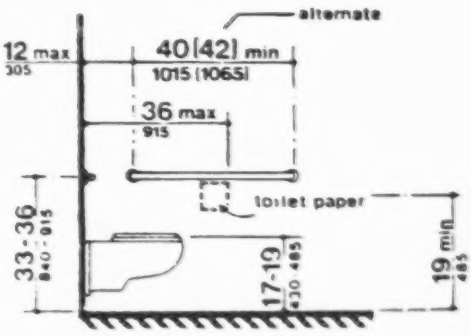
(b)
Alternate Stalls (below)

Fig. 30
Toilet Stalls



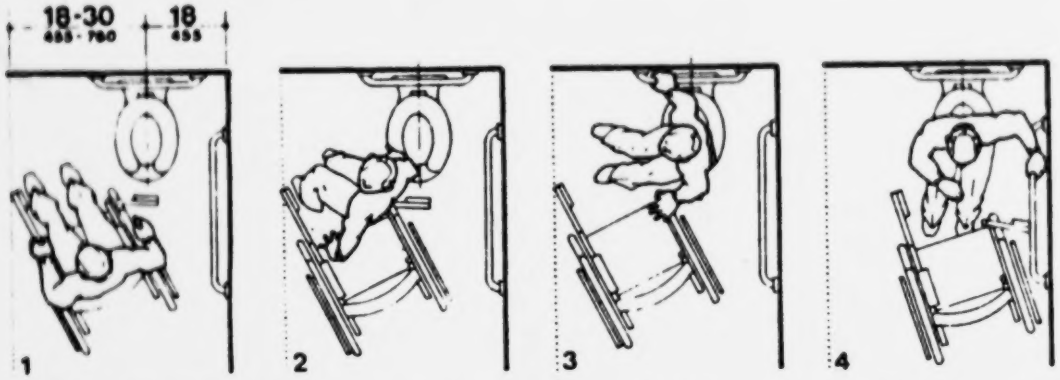


(c)
Rear Wall of Standard Stall



(d)
Side Walls

(Fed. Reg.)



Takes transfer position, swings footrest out of the way, sets brakes.

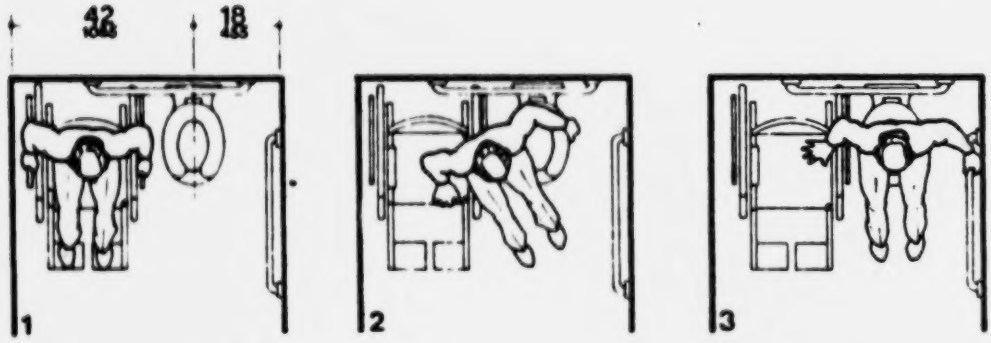
Removes armrest, transfers.

Moves wheelchair out of the way, changes position (some people fold chair or pivot it 90° to the toilet).

Positions on toilet, releases brake.

(a)

Diagonal Approach



Takes transfer position, removes armrest, sets brakes.

Transfers.

Position on toilet.

(b)

Side Approach

Fig. A5

Wheelchair Transfers

(Fed. Reg.)

Flush Controls. Flush controls shall be hand operated, shall comply with the guidelines for control operating mechanisms, and shall be mounted no more than 44in. (1120 mm) above the floor. (Fed. Reg.)

Lavatories, Sinks, and Mirrors

Height and Clearances. Lavatories shall be mounted with the rim or counter surface no higher than 34 in. (865 mm) above the finished floor. Provide a clearance of at least 29 in. (735 mm) from the floor to the bottom of the apron. Knee and toe clearances shall comply with Fig. 31. (Fed. Reg.)

Clear Floor Space. A clear floor space 30 in. by 48 in. (760 mm by 1220 mm) shall be provided in front of a lavatory to allow a forward approach. Such clear floor space shall adjoin or overlap an accessible route and shall extend a maximum on 19 in. (485 mm) underneath the lavatory (see Fig. 32). (Fed. Reg.)

Exposed Pipes and Surfaces. Hot water and drain pipes under lavatories shall be insulated or otherwise covered. There shall be no sharp or abrasive surfaces under lavatories. (Fed. Reg.)

Faucets. Faucets shall comply with the guideline for Controls and Operating Mechanisms. Lever-operated, push-type, and electronically controlled mechanisms are examples of acceptable designs. Self-closing valves are allowed if the facet remains open for at least 10 seconds. (Fed. Reg.)

Mirrors. Mirrors shall be mounted with the bottom edge of the reflecting surface no higher than 40 in. (1015 mm) from the floor (see Fig. 31).
(Fed. Reg.)

Medicine Cabinets. If medicine cabinets are provided, at least one shall be located with a usable shelf no higher than 44 in. (1120 mm) above the floor space. (Fed. Reg.)

Bathtubs

Floor Space. Clear floor space in front of bathtubs shall be as shown in Fig. 33. (Fed. Reg.)

Seat. An in-tub seat or a seat at the head end of the tub shall be provided as shown in Fig. 33 and 34. Seats, grab bars, and their attachments shall comply with the section on Handrails, Grab Bars, and Tub and Shower seats. Seats shall be mounted securely and shall not slip during use.

Grab Bars. Grab bars shall be provided as shown in Fig. 33 and 34. (Fed. Reg.)

Controls. Faucets and other controls shall be located as shown in Fig. 34. (Fed. Reg.)

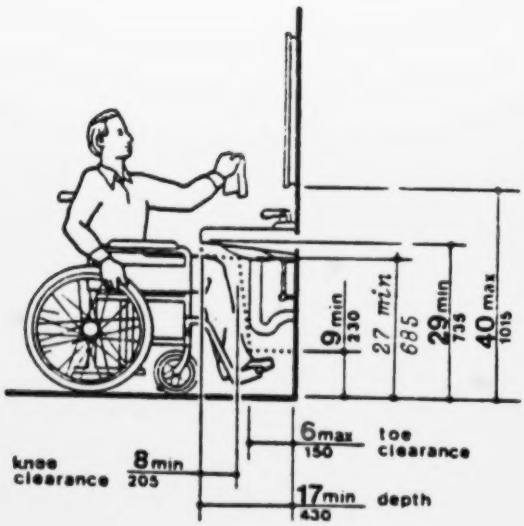


Fig. 31
Lavatory Clearances

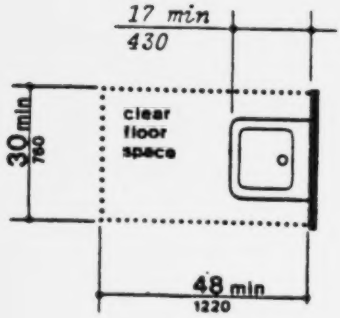
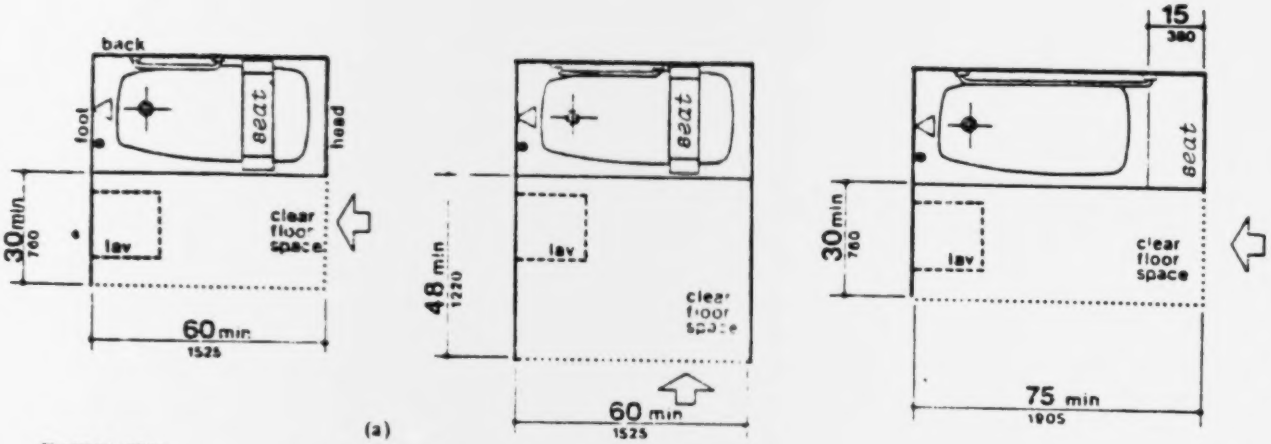


Fig. 32
Clear Floor Space at Lavatories



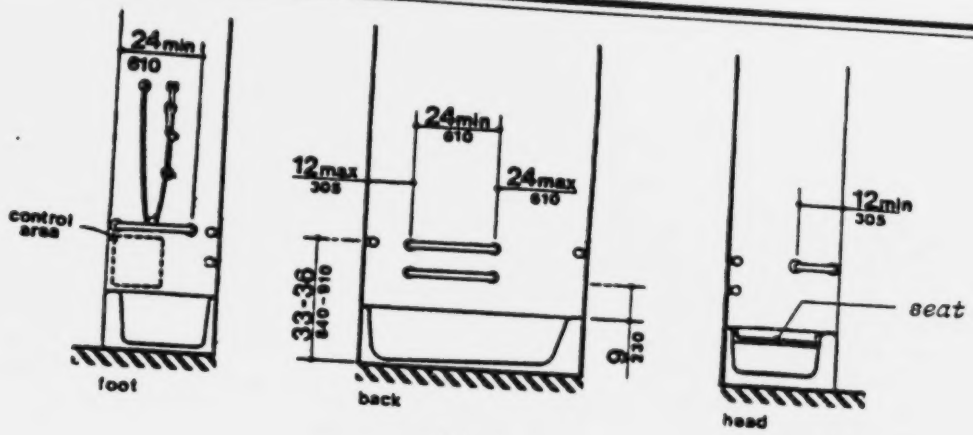
SYMBOL KEY:
• Shower controls
Shower head
Drain

(a)
With Seat in Tub

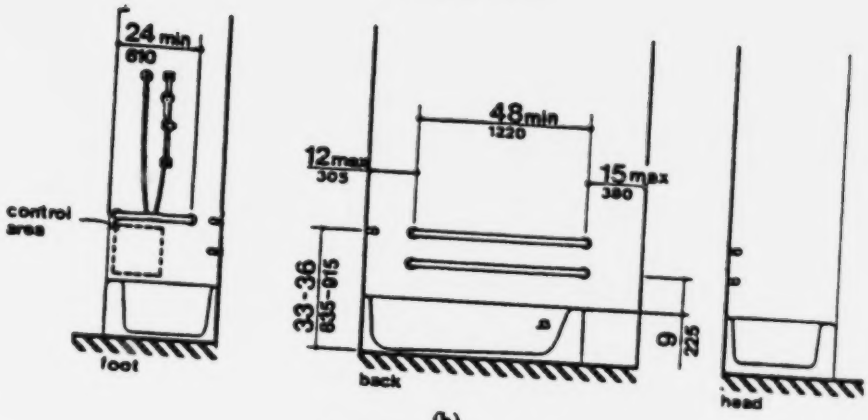
(b)
With Seat at Head of Tub

Fig. 33
Clear Floor Space at Bathtubs

(Fed. Reg.)



(a)
With Seat in Tub



(b)
With Seat at Head of Tub

Fig. 34
Grab Bars at Bathtubs

(Fed. Reg.)

Shower Unit. A shower spray unit with a hose at least 60-in. (1525-mm) long that can be used as fixed shower head or as a hand-held shower shall be provided. (Fed. Reg.)

Bathtub Enclosures. If provided, enclosures for bathtubs shall not obstruct controls or transfer from wheelchairs onto bathtub seats or into tubs. Enclosures on bathtubs shall not have tracks mounted on their rims. (Fed. Reg.)

Shower Stalls

Size and Clearances. Shower stall size and clear floor space shall comply with Fig. 35(a) shall by 36 in. by 36 in. (915 mm by 915 mm). The shower stall in Fig. 35(b) will fit into the space required for a bathtub. (Fed. Reg.)

Seat. A seat shall be provided in shower stalls 36 in. by 36 in. (915 mm by 915 mm) and shall be as shown in Fig. 36. The seat shall be mounted 17 in. to 19 in. (430 mm to 485 mm) from the bathroom floor and shall extend the full depth of the stall. The seat shall be on the wall opposite the controls. Seats, grab bars, and their attachments shall comply with the section on handrails, grab bars, and tub and shower seats. (Fed. Reg.)

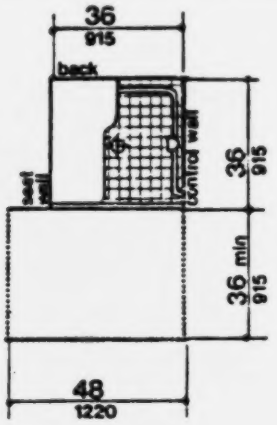
Grab Bars. Grab bars shall be provided as shown in Fig. 37. (Fed. Reg.)

Controls. Faucets and other controls shall be located as shown in Fig. 37. In shower stalls 36 in. by 36 in. (915 mm by 915 mm), all controls, faucets, and the shower unit shall be mounted on the side wall opposite the seat. (Fed. Reg.)

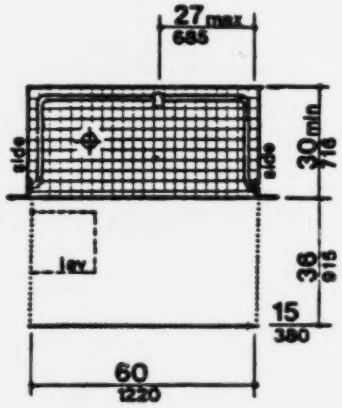
Shower Unit. A shower spray unit with a hose at least 60 in. (1525 mm) long that can be used as a fixed shower head or as a hand-held shower shall be provided. However, in unmonitored facilities where vandalism is a consideration, a fixed shower head mounted at 48 in. (1220 mm) above the shower floor may be used in lieu of a hand-held shower head. (Fed. Reg.)

Curbs. If provided, curbs in shower stalls 36 in. by 36 in. (915 mm by 915 mm) shall be no higher than 1/2 in. (13 mm). Shower stalls that are 30 in. by 60 in. (760 mm by 1525 mm) shall not have curbs. (Fed. Reg.)

Shower Enclosures. If provided, enclosures for shower stalls shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats. (Fed. Reg.)



(a)
36-in by 36-in
(915-mm by 915-mm) Stall



(b)
30-in by 60-in
(760-mm by 1525-mm) Stall

Fig. 35
Shower Size and Clearances

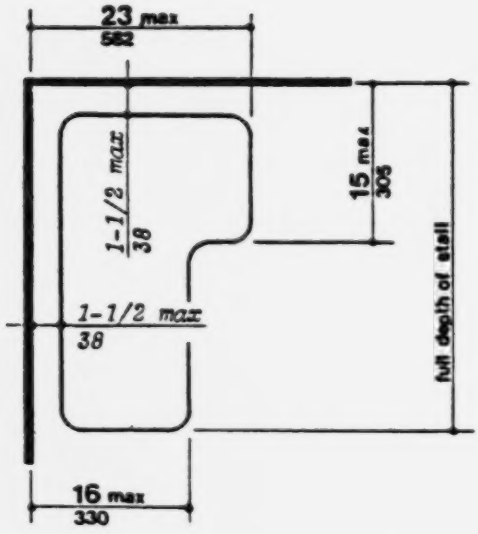
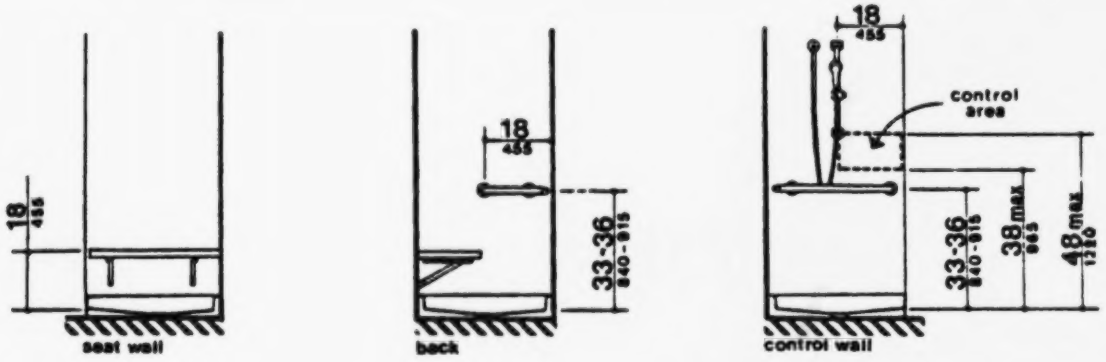
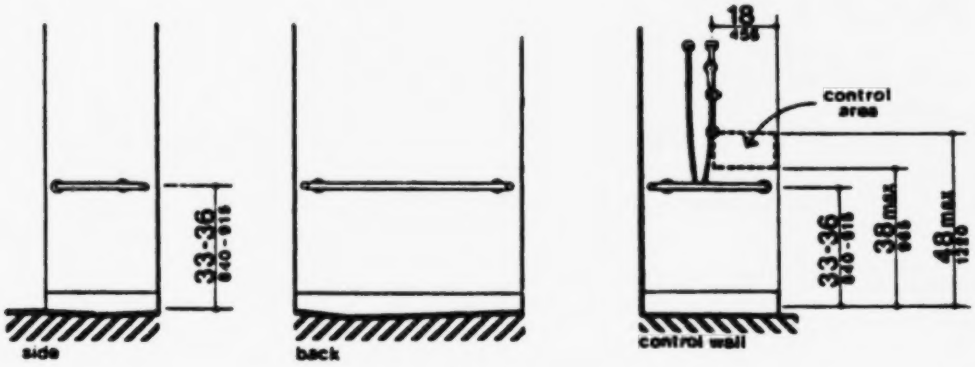


Fig. 36
Shower Seat Design

(Fed. Reg.)



(a)
36-in by 36-in (915-mm by 915-mm) Stall



(b)
30-in by 60-in (760-mm by 1525-mm) Stall

Fig. 37
Grab Bars at Shower Stalls

(Fed. Reg.)

Handrails, Grab Bars, and Tub and Shower Seats

Size and Spacing of Grab Bars and Handrails. The diameter or width of the gripping surfaces of a handrail or grab bar shall be 1-1/4 in. to 1-1/2 in. (32 mm to 38 mm), or the shape shall provide an equivalent gripping surface. If handrails or grab bars are mounted adjacent toa wall, the space between the wall and the handrail or grab bar shall be 1-1/2 in. (38 mm) (see Fig. 39(a), (b), and (c)). Handrails may be located in a recess if the recess in a maximum of 3-in (75 mm) deep and extends at least 18 in (455 mm) above the top of the rail (see Fig. 39(d)). (Fed. Reg.)

Structural Strength. The structural strength of grab bars, tub and shower seats, fasteners, and mounting devices shall meet the follwing specifications:

(1) Bending stress in a grab bar or seat induced by the maximum bending moment for the application of 250 lbf (1112 N) shall be less than the allowable stress for the material of the grab bar or seat.

(2) Shear stress induced in a grab bar or seat by the application of 250 lbf (1112 N) shall be less than the allowable shear stress for the material of the grab bar or seat. If the connection between the grab bar or seat and its mounting bracket or other support is considered to be fully restrianed. then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.

(3) Shear force induced in a fastener or mounting device from the application of 250 lbf (1112 N) shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.

(4) Tensile force induced in a fastener by a direct tension force of 250 lbf (1112 N) plus the maximum moment from the application of 250 lbf (1112 N) shall be less than the allowable withdrawal load between the fastener and the supporting structure.

(5) Grab bars shall not rotate within their fittings. (Fed. Reg.)

Eliminating Hazards. A handrail or grab bar and any wall or other surface adjacent to it shall be free of any sharp or abrasive elements. Edges shall have a minimum radius of 1/8 in (3.2 mm). (Fed. Reg.)

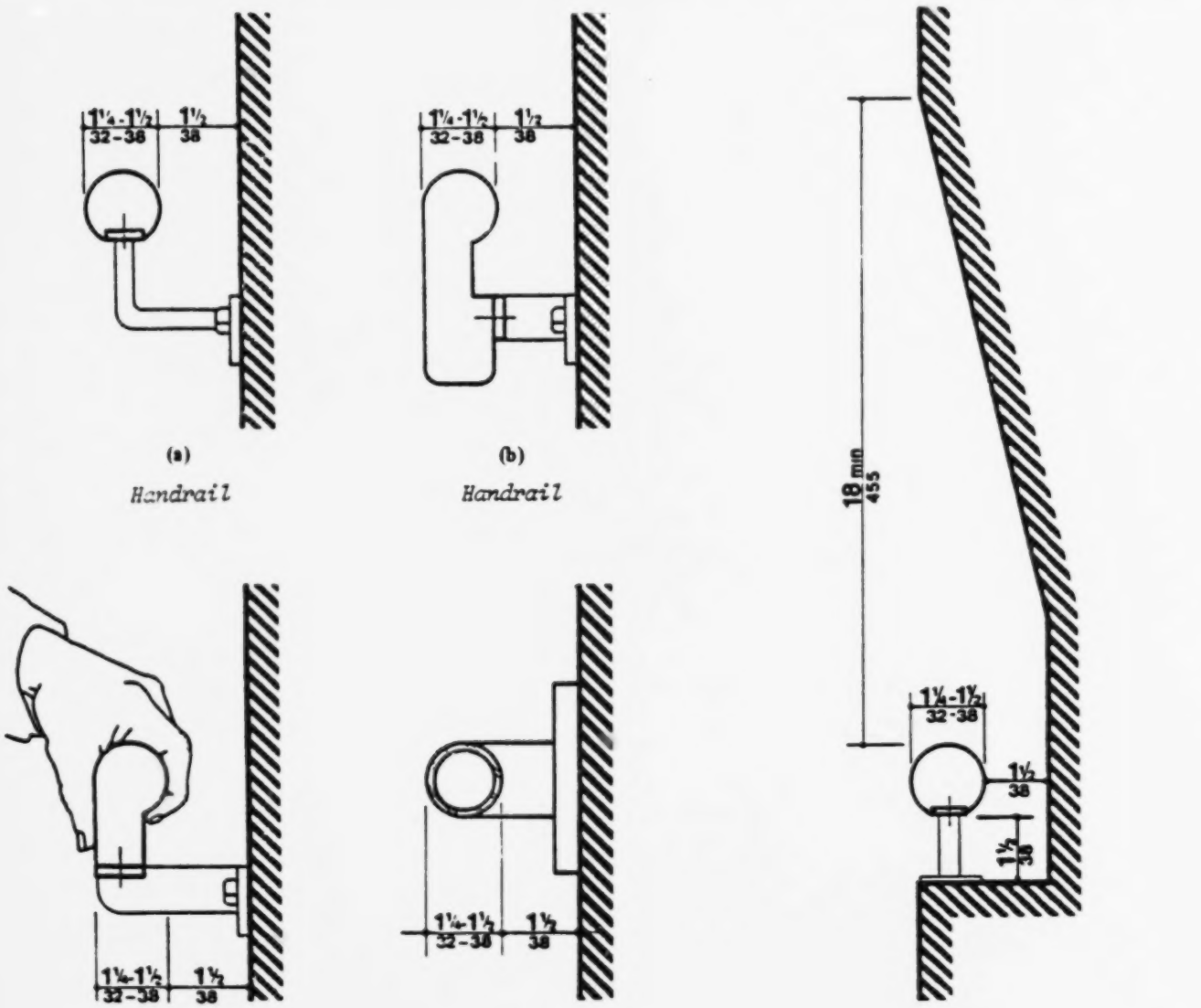


Fig. 39
Size and Spacing of Handrails and Grab Bars

(Fed. Reg.)

Vault Toilets

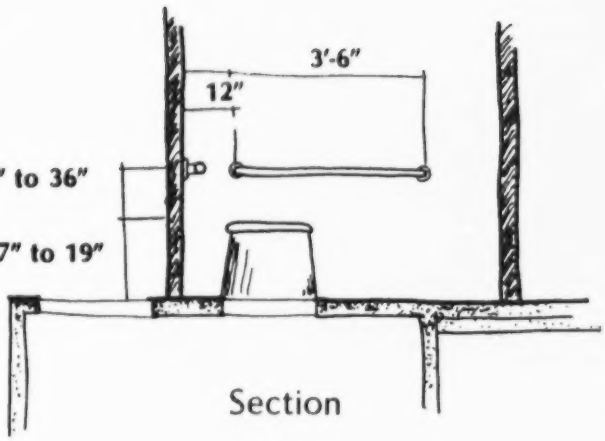
Approach to toilet should be graded or ramped with a slope no greater than 1:12

A stall, 5' x 6', is accessible to most people and will permit a side transfer from wheelchair to toilet

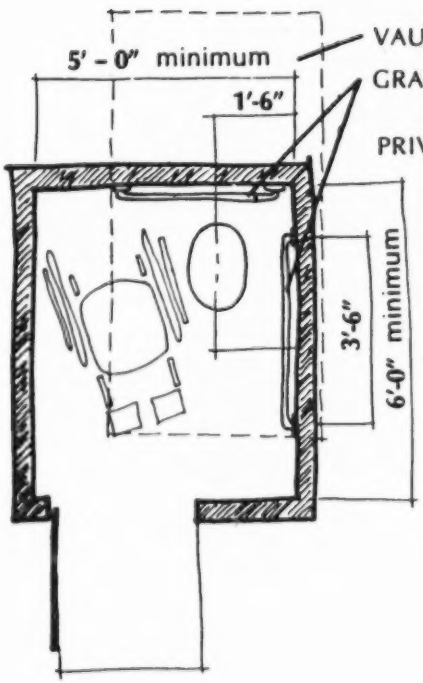
Grab bars at least 3' - 6' long to the side of the toilet and 3'- 0' long in back of the toilet will allow most people to transfer from wheelchair to toilet

Grab bars should be 1 1/2" in diameter and no more than 1 1/2" from the wall (otherwise, arms can slip and be trapped between bar and wall. (HCRS)

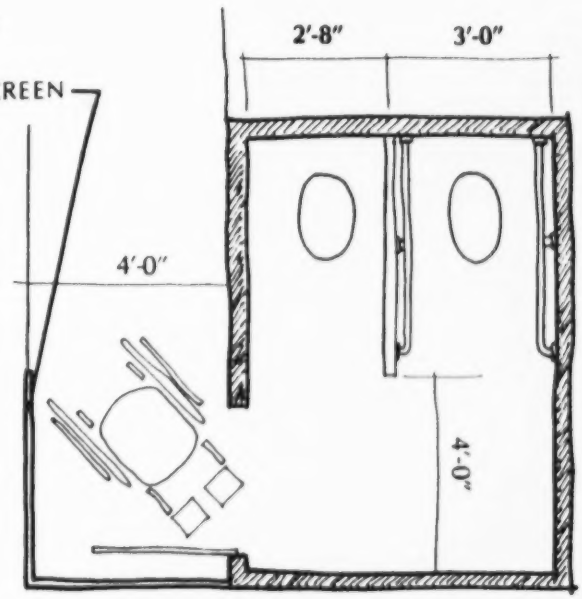
VAULT TOILETS



Section



Single Toilet: Plan



Two-hole Toilet: Plan

(HCRS)

SIGNAGE

Signs that everyone can 'read' are vital for a recreation area that is usable by all. They not only orient visitors to the area but also direct traffic flow, identify points of interest, and warn of hazards.

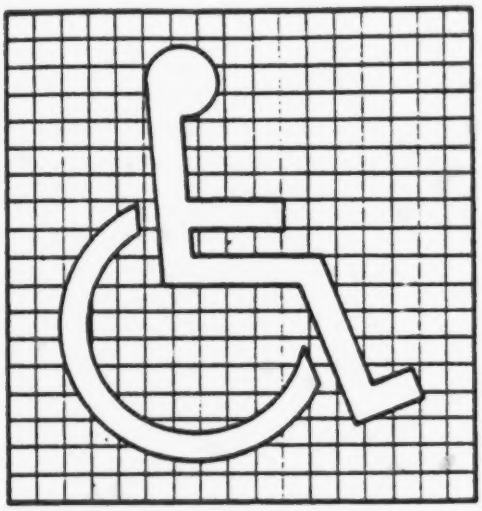
Signs should be 'readable' by senses other than vision, such as touch of hearing. Raised lettering and symbols easily convey information to people reading with either their hands or eyes. For the visually impaired, however, a sighted guide or audio tape device is often a more effective way to convey information at zoos, nature centers, museums, and other recreation areas.

General guidelines for readable signs:

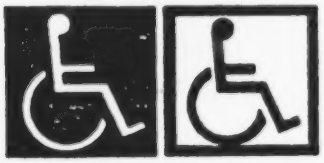
- Place signs within easy range of vision and reach.
- Keep signs free of obstructing branches and buildings.
- Place signs at a height comfortable for children and seated/standing adults. Use consistent mounting height and location.
- Greatest readability is achieved through the use of light-colored characters or symbols on a dark background.
- Raised characters should be at least 5/8" (16mm) high, but no higher than 2" (50 mm) and raised at least 1/32" (0.8 mm) off the background to be 'legible' to blind or partially sighted persons. Symbols or pictographs on signs should be raised at least 1/32" (0.8 mm).
- Raised characters should use standard alphabet and Arabic numerals; the majority of people with severe visual impairments do not read Braille.
- Use a precise and clear message. (HCRS)
- Keep vocabulary simple.

INTERNATIONAL SYMBOL OF ACCESS

Misuse and inconsistent use of the International Symbol of Access at recreation facilities is a common problem. It is recommended that a main International Symbol of Access be located at primary public contact points such as entrance gates, fee collection booths, and visitor centers where it will be clearly visible. As specific areas and activities become accessible, small graphic signs can be attached



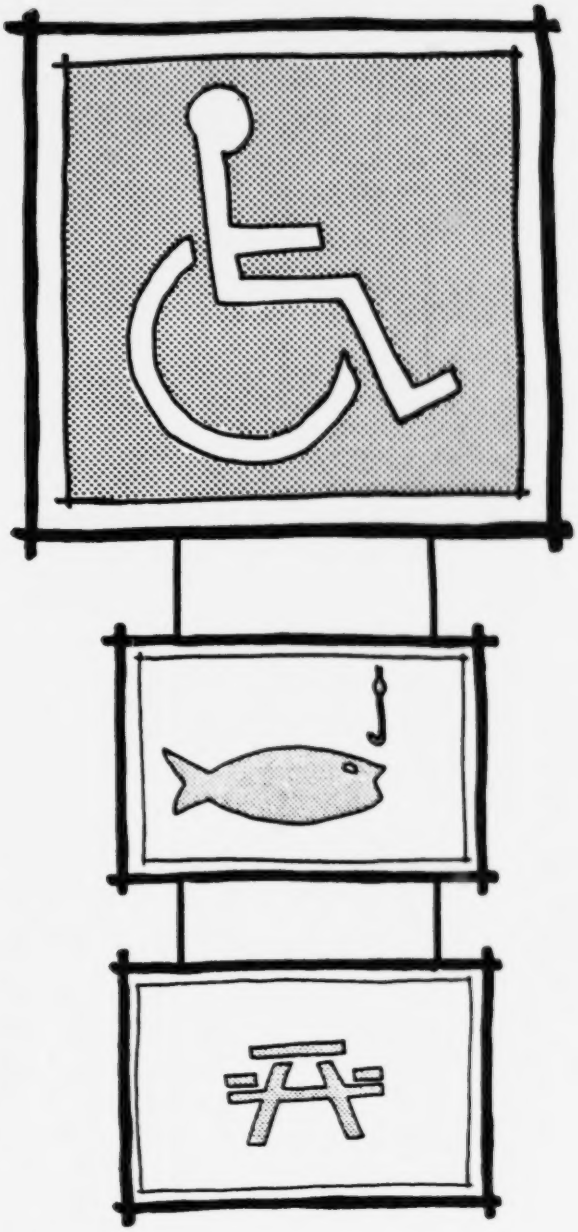
(a)
Proportions



(b)
Display Conditions

Fig. 43
International Symbol of Accessibility

(Fed. Reg.)



(HCRS)

below the main sign indicating accessibility to that facility. In addition, brochures distributed at these contact stations can list and map park activities with the international symbol next to those that are barrier-free. (HCRS)

It is then the responsibility of the user to inquire of the park staff as to the degree of access provided and the exact location of the accessible areas. This prevents overuse of the international symbol throughout the park and avoids the stigmatizing effect the symbol may have on a particular facility. (HCRS)

STORES, TACKLE SHOPS AND RESTAURANTS

See guidelines for Space Allowances and Reach Ranges; Clear Floor and Ground Space for Wheelchairs; Protruding Objects; Ground and Floor Surfaces.

Restaurants and Cafeteria. In addition to other requirements, the design of at least 5% of all fixed seating or tables in a restaurant or cafeteria shall comply with the guidelines for seating, tables, and work surfaces. Access aisles between tables shall comply with the guidelines for accessible routes. Where practical, accessible tables should be distributed throughout the space or facility. In restaurants or cafeterias where there are mezzanine levels, loggias, or raised platforms, accessibility to all such spaces is not required providing that the same services and decorative character are provided in spaces located on accessible routes. (Fed. Reg.)

Food Service Lines. Food service lines shall have a minimum clear width of 36 in. (915 mm), with a preferred clear width of 42 in. (1065 mm) where passage of stopped wheelchairs by pedestrians is desired. Tray slides shall be mounted no higher than 34 in. (865 mm) above the floor. If self-service shelves are provided, a resaonable portion must be within the ranges shown in Fig. 53. (Fed. Reg.)

Tableware Areas. Install tableware, dishware, condiment, food and beverage display shelves, and dispensing devices in compliance with Fig. 54. (Fed. Reg.)

Vending Machines. Install vending machines in compliance with the guidelines for Controls and Operating Mechanisms and Allowable Reach Ranges. (Fed. Reg.)

Service Counters. Where service counters exceeding 36 in. (915 mm) in height are provided for standing sales or distribution of goods to the public, an auxiliary counter or a portion of the main counter shall be provided with a maximum height of between 28 in. to 34 in. (710 mm to 865 mm) above the floor. (Fed. Reg.)

Check-Out Aisles. At least one accessible check-out aisle shall be provided in buildings or facilities with check-out aisles. Clear aisle width shall comply with the guidelines for space allowances and maximum

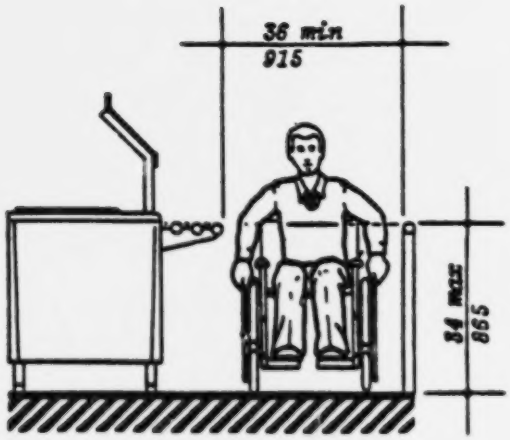


Fig. 53

Food Service Lines

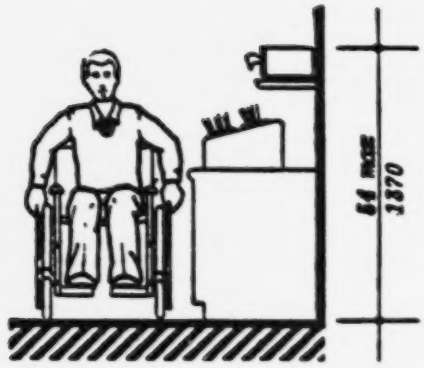


Fig. 54

Tableware Areas

(Fed. Reg.)

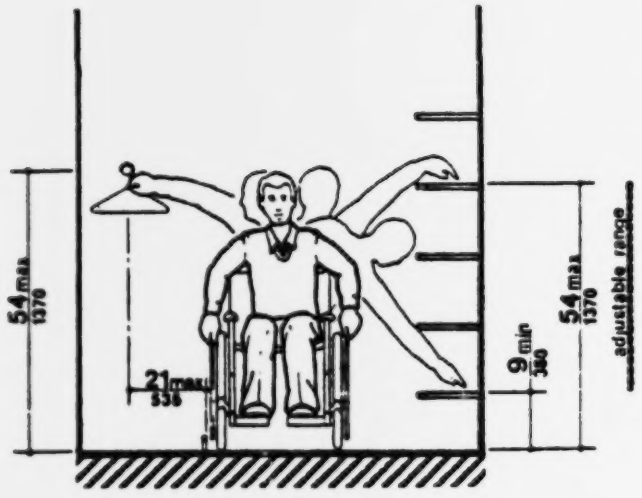


Fig. 38
Storage Shelves and Closets

(Fed. Reg.)

adjoining counter height shall not exceed 36 in. (915 mm) above the floor. (Fed. Reg.)

Security Bollards. Any device used to prevent the removal of shopping carts from store premises shall not prevent access or egress to those in wheelchairs. An alternate entry that is equally convenient to that provided for the ambulatory population is acceptable. (Fed. Reg.)

LAUNDRY AREAS

Laundry Facilities. If laundry equipment is provided within individual accessible dwelling units, or if separate laundry facilities serve one or more accessible dwelling units, then they shall meet the requirements of the provided guidelines. (Fed. Reg.)

Location. Laundry facilities and laundry equipment shall be on an accessible route. (Fed. Reg.)

Washing Machines and Clothers Dryers. Washing machines and clothers dryers in common-use laundry rooms shall be front loading. (Fed. Reg.)

Controls. Laundry equipment shall comply with the section on controls and operating mechanisms. (Fed. Reg.)

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